



Cultural Resource Report

Heber 1 Parasitic Solar Project

Imperial County, California

July 14, 2025

Cultural Resource Inventory Report for the Heber 1 Parasitic Solar Project, Imperial County, California

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Management Summary

The Heber 1 Solar Project (Project) proposes to develop a 20-megawatt solar energy facility that would provide parasitic load to the existing Heber 1 Geothermal Energy Facility (Heber 1 Plant) near the community of Heber, Imperial County, California. The proposed Project area consists of a 155-acre solar array field (Assessor's Parcel Number 059-020-001) with three interconnection route options proposed, of which only one will be chosen. In 2023, Catalyst Environmental Solutions (Catalyst) initially contracted Chronicle Heritage to conduct preliminary cultural resource assessment work (Clark and Torres 2024). In 2025, Catalyst subsequently took over the cultural resources studies and conducted further surveys for the addition of two interconnection line routes, ensuring comprehensive coverage of the expanded Project area in compliance with the California Environmental Quality Act (CEQA).

This report summarizes the methods and results of Catalyst's 2025 cultural resource assessment. The investigation includes background research, extensive field surveys covering both original and additional project components, resource documentation and evaluation, and an impacts assessment to determine the potential of the Project to impact archaeological and historical resources under CEQA. Catalyst conducted comprehensive records searches at the South Coastal Information Center (SCIC) on May 14, 2025, building upon Chronicle Heritage's initial 2023 and 2024 work to identify prior cultural resources studies and previously recorded resources within one mile of the expanded Project area, including the additionally proposed transmission line corridors.

The initial outreach conducted by Chronicle Heritage on behalf of Catalyst using information gathered from the Native American Historic Commission, (NAHC) resulted in contacting 24 individuals representing 16 local tribal groups. The 2023 NAHC's Sacred Lands File search results were positive and six tribal responses were received in 2023.

In May 2025, Catalyst conducted comprehensive pedestrian surveys expanding upon Chronicle Heritage's initial 2024 work (Clark and Torres 2024), which included field surveys for the proposed additional 1.10 mile transmission line routes (Routes 1 and 2). The survey encompassed all 155-acres of the proposed parasitic solar field, portions of the three proposed interconnection line alignment routes with 300-foot buffers, encompassing approximately 3.4 miles (5.4 kilometers).

As a result of the 2025 efforts, seven historic period resources were relocated and identified within the Project area. These include a railroad alignment (P-13-008682; Niland to Calexico Railroad), a historic residential property (602 Dogwood Road), and five irrigation-related resources (Central Main Canal, Dogwood Canal, Beech Canal and Drain, Daffodil Canal and Lateral 1, and Date Drain No. 3). All identified resources were reviewed for California Register of Historic Resources (CRHR) eligibility under Criteria 1, 2, 3, and 4.

The study indicates that the Central Main Canal and the Niland to Calexico Railroad (P-13-8682) are recommended eligible or to remain unevaluated for CRHR listing, respectively. The impact assessment (Section 8.1) concluded that both resources would not be impacted by the proposed Project.

Based on these findings, Catalyst recommends a finding of **no impact** to historical or archaeological resources pursuant to § 15064.5 under CEQA.

SECTION 1 Introduction

The proposed Heber 1 Solar Project (Project) consists of the development of a solar energy facility providing parasitic load to the existing Heber Geothermal Energy Facility. The Applicant (ORNI 5; ORMAT) contracted Catalyst Environmental Solutions Inc. (Catalyst) to conduct a cultural resource review of the Project area in compliance with the California Environmental Quality Act (CEQA). The Imperial County Planning and Development Services are the acting Lead Agency for CEQA compliance and review.

This report documents and summarizes the results of the cultural resource survey conducted for the proposed Project. Chapter 1 has introduced the Project location and description. Chapter 2 states the regulatory context for the Project. Chapter 3 synthesizes the natural and cultural setting of the Project area and surrounding region. The results of the previous cultural investigations and the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) search are presented in Chapter 4. The field methods employed during this investigation and the findings are discussed in Chapter 5. An impact analysis and management recommendations are provided in Chapter 6. These are followed by bibliographic references and appendices.

1.1 Project Description and Location

The proposed Project site is located near the community of Heber in unincorporated Imperial County, California (Figures 1-1 and 1-2). The Project encompasses approximately 155 acres of privately owned land, identified as Assessor's Parcel Number (APN 059-020-001). The proposed alignments cross Sections 32 and 33, Township 16 South, Range 14 East, and Sections 3 and 4, Township 17 South, Range 14 East (Figure 1-1). The Project parasitic solar site lies within Section 3, Township 17 South, Range 14 East of the San Bernardino Baseline and Meridian, as shown on the U.S. Geological Survey (USGS) Heber, CA 7.5-minute topographic quadrangle (Figure 1-1).

ORNI 5 LLC (a subsidiary of ORMAT) proposes the development of a 20-megawatt (MW) solar energy facility on APN 59-020-001 to supply parasitic load to the existing Heber 1 Geothermal Energy Facility. The proposed solar facility would be located immediately south of the planned Dogwood/Heber 2 parasitic solar fields and would be connected to the Heber 1 geothermal plant via a proposed buried medium-voltage interconnection line ranging between 1.2 to 2.3 miles in length.

Three optional routes are proposed for the interconnection line (please see Figure 1-2).

Route 1 – a medium voltage cable would exit the northeast corner of the solar site and travel north approximately 0.35 miles along an existing raised berm. The cable would either be directionally buried or strung on monopoles to cross the Central Main Canal and Willoughby Road. The cable would continue along Ware Road for approximately 0.3 miles where it would meet an existing pipeline alignment that runs east 0.36 miles to the Heber 1 Plant. All road, canal, and rail crossings would be overhead via 30 foot (9 meter) monopoles or would be directionally buried underground, if feasible.

Route 2 – similar to Route 1, the medium voltage cable would exit the northeast corner of the solar site and travel approximately 0.35 miles north along an existing raised berm. Before Willoughby Road, the cable would turn west for approximately 0.15 miles and then the cable would either be directionally buried or strung on monopoles to cross Willoughby Road and the Central Main Canal to an existing geothermal well pad. The cable

would run east for 0.15 miles along an existing pipeline alignment and then turn north for 0.37 miles along the same pipeline alignment on Ware Road where it would meet an existing pipeline alignment that runs to the Heber 1 Plant. All roads, canals, and rail crossings would be overhead via 30 foot (9 meter) monopoles or would be directionally buried underground, if feasible.

Route 3 – the medium voltage cable would cross Dogwood Road and be attached via trays to the existing pipeline that runs west for 0.25 miles before turning north for 0.25 miles to cross the Beech Drain and Main Canal at the existing above-ground pipeline crossing. The cable would continue to follow the existing pipeline alignment for approximately 0.77 miles to the Heber Geothermal Energy Complex and travel along the northern boundary to exit the HGEC’s northeast corner. The cable would not connect to any HGEC energy facilities, simply pass through the site. The cable would then cross back over Dogwood Road and continue down an existing pipeline alignment west for 1.10 miles to the Heber 1 Plant. All road and rail crossings would be overhead via 30 foot (9 meter) monopoles or would be directionally buried underground, if feasible.

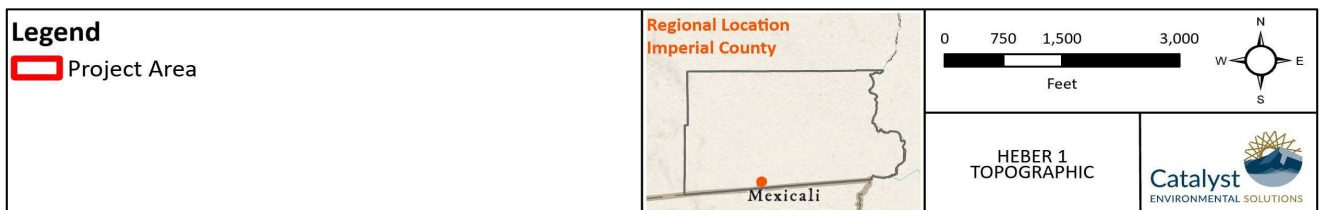
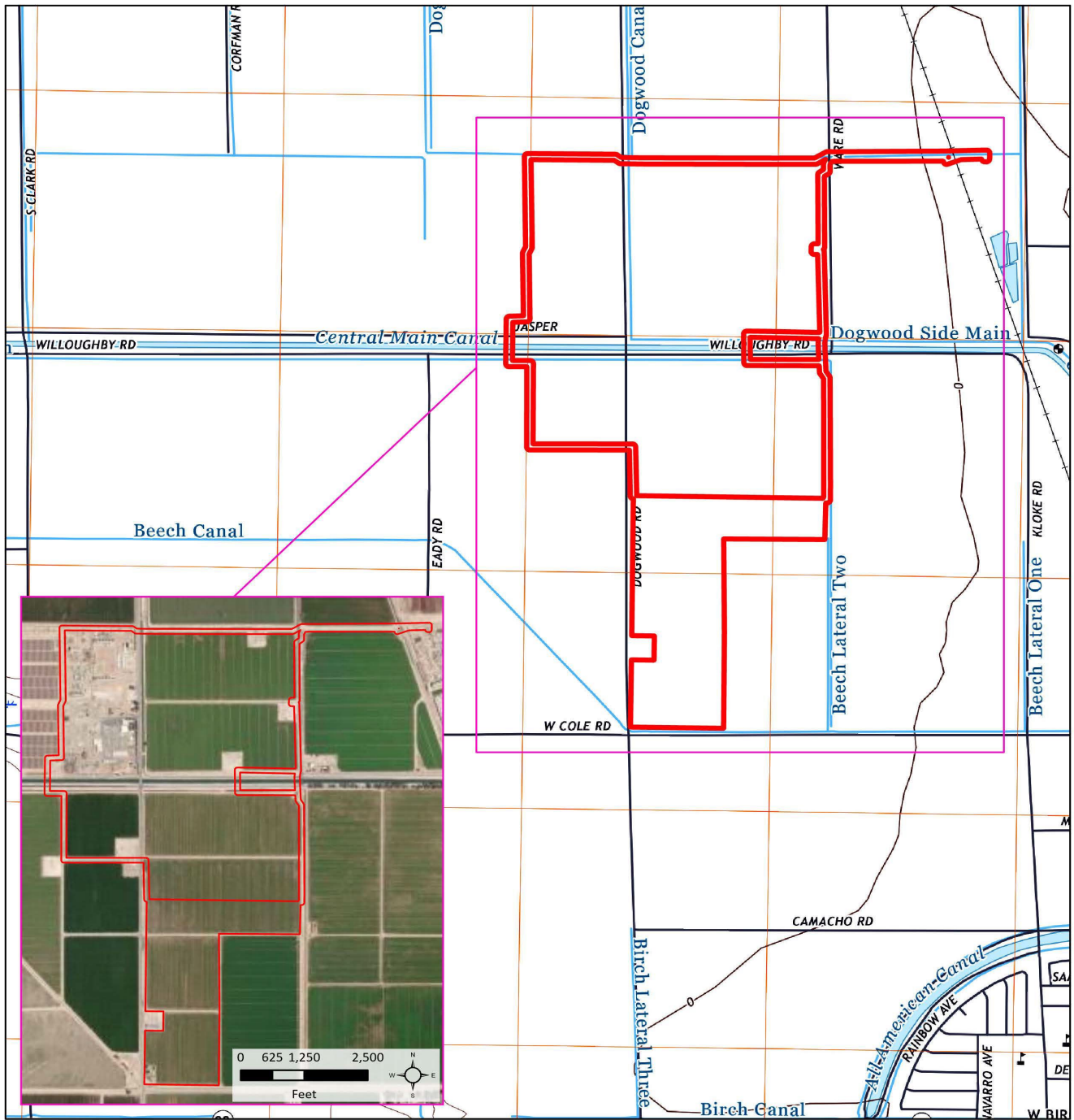
Currently, the site overall includes a residence, geothermal pipeline, a storage/laydown area, and actively cultivated alfalfa fields. The parcel is zoned A2GU for agricultural use and is located within both the Heber Geothermal Unit and the Imperial County Renewable Energy Overlay Zone. Surrounding land uses are primarily agricultural, with additional nearby infrastructure including solar energy facilities, a construction/aggregates operation, a land and cattle company, and geothermal well pads and pipelines.

1.2 Personnel Qualifications

Katherine Tipton, M.S., Register of Professional Archaeologists (RPA), Cultural Resources Practice Lead at Catalyst, served as the Principal Investigator and provided senior oversight, technical expertise, completed the record search of the South Coastal Information Center (SCIC), and is the primary author of this report.

Tim Lee, B.A., Staff Scientist at Catalyst, has over three years of field experience in Cultural, Biological, and Visual impact surveys, remediation oversight, Phase 1 ESA Investigation, and Water Delineation. He has conducted various cultural surveys throughout western United States.

Adrian Gonzalez, M.S., Staff Scientist at Catalyst Environmental Solutions, served as the lead geospatial analyst and geospatial data manager. Mr. Gonzalez has seven years of experience working in geographic information systems (GIS). He has provided senior oversight, technical expertise, and is the primary curator of spatial data for the Project.



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Figure 1-1. Project Area for the Heber 1 Parasitic Solar Project.

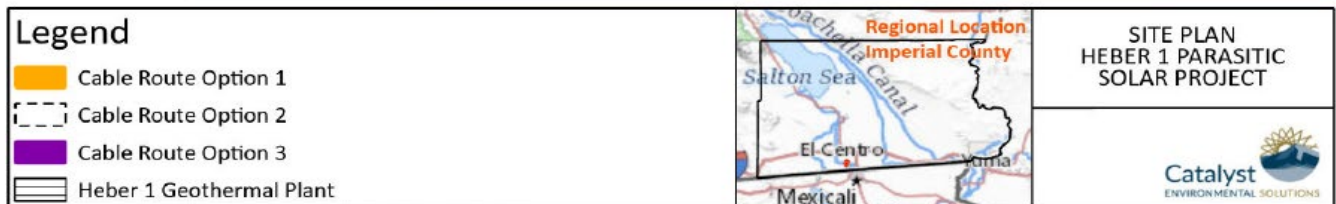
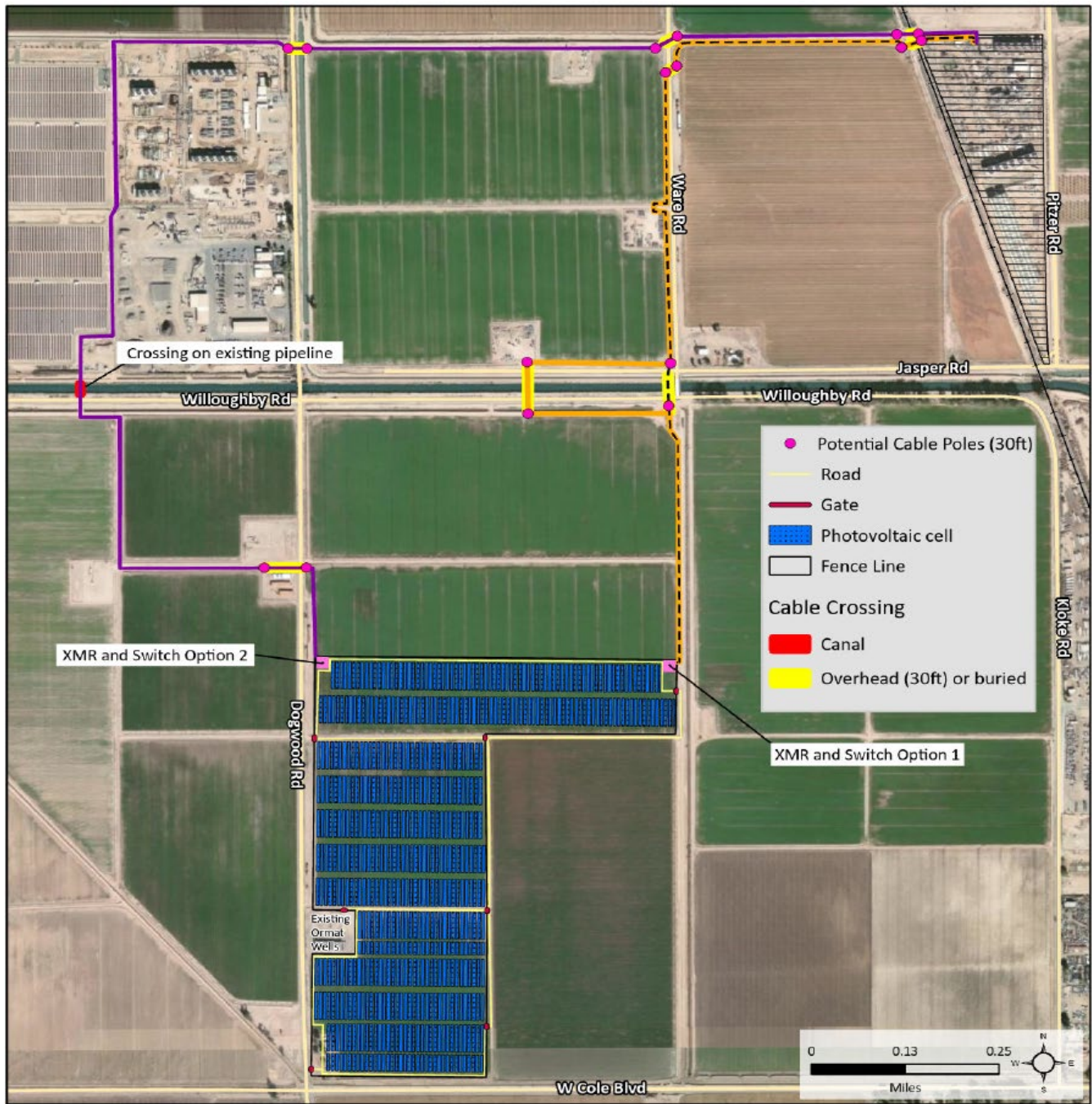


Figure 1-2. Aerial Site Plan for the Heber 1 Parasitic Solar Project.

SECTION 2 Regulatory Context

This section outlines the relevant laws, ordinances, regulations, and standards governing cultural resources that pertain to the proposed Project.

2.1 California Environmental Quality Act (CEQA)

The proposed Project is subject to compliance with the California Environmental Quality Act (CEQA), as amended. Compliance with CEQA statutes and guidelines requires both public and project projects with financing or approval from a public agency to assess the project's impact to cultural resources (Public Resources Code Sections 21082, 21083.2 and 21084 and California Code of Regulations 10564.5). The initial step in the process is to identify cultural resources that may be impacted by the project and to determine whether the resources are historically significant.

CEQA defines historically significant resources as “resources listed or eligible for listing in the California Register of Historical Resources (CRHR)” (Public Resources Code Section 5024.1). A cultural resource may be considered historically significant if the resource is 45 years old or older and possesses integrity of location, design, setting, materials, workmanship, feeling, and association. Additionally, it must meet any of the following criteria for listing in the CRHR:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values, or;
- Has yielded, or may be likely to yield, information important to prehistory or history (Public Resources Code Section 5024.1).

Cultural resources include buildings, sites, human-modified landscapes, traditional cultural places, structures, and objects that may possess historical, architectural, cultural, or scientific significance. Under the California Environmental Quality Act (CEQA), a resource may be considered historically significant not only based on eligibility for the California Register of Historical Resources (CRHR), but also by virtue of its inclusion in a local register of historical resources (Title 14, California Code of Regulations [CCR], Section 15064.5[a][2]). If a project may significantly impact such resources, CEQA requires consideration of project alternatives and mitigation measures. While the Office of Historic Preservation (OHP) does not review all projects that may affect cultural resources, it may provide informal comments on CEQA compliance for certain local government projects.

2.2 Assembly Bill 52 (AB 52)

Signed into law in September 2014, Assembly Bill 52 (AB 52) established a new category of resources, tribal cultural resources, for consideration under the California Environmental Quality Act (CEQA). Tribal cultural resources may include sites, features, places, cultural landscapes, sacred areas, or objects of cultural significance to a California Native American tribe. These resources may be listed in, or determined eligible for

listing in, the California Register of Historical Resources (CRHR); included in a local register of historical resources; or identified by the lead CEQA agency, in its discretion and supported by substantial evidence, as significant and eligible for CRHR listing.

AB 52 requires the lead CEQA agency to consult with California Native American tribes that have formally requested consultation when a proposed project may impact tribal cultural resources. This consultation must begin prior to the release of a negative declaration, mitigated negative declaration, or draft environmental impact report. Under AB 52, a project that may cause a substantial adverse change to a tribal cultural resource is considered to have a significant effect on the environment, unless mitigation reduces that impact to a less-than-significant level.

2.3 Imperial County General Plan

2.3.1 Conservation and Open Space Element

The Conservation and Open Space Element of County's General Plan (County of Imperial 2016) contains one goal and one policy related to the protection and preservation of cultural resources. This includes:

GOAL 3: Preserve the spiritual and cultural heritage of the diverse communities of Imperial

County.

- Objective 3.1: Protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.
- Objective 3.2: Develop management strategies to preserve the memory of important historic periods, including Spanish, Mexican, and early American settlements of Imperial County.
- Objective 3.3: Engage all local Native American Tribes in the protection of tribal cultural resources, including prehistoric trails and burial sites.

Cultural Resources Conservation Policy:

Identify and document significant historic and prehistoric resources and provide for the preservation of representative and worthy examples; and recognize the value of historic and prehistoric resources and assess current and proposed land uses for impacts upon these resources.

2.3.2 Renewable Energy and Transmission Element

The Project lies within Imperial County's Renewable Energy Overlay Zone, the Renewable Energy and Transmission Element of the General Plan applies (County of Imperial 2015). This element contains several goals and associated objectives that are relevant to cultural resources.

The elements include:

Goal 1: *Support the safe and orderly development of renewable energy while providing for the protection of environmental resources.*

- **Objective 1.1:** The County of Imperial supports the overall goals of the Desert Renewable Energy Conservation Plan to provide a balance between the development of renewable energy resources while preserving sensitive environmental resources within its jurisdiction.

- **Objective 1.2:** Lessen impacts of site and design production facilities on agricultural, natural, and cultural resources.
- **Objective 1.3:** Require the use of directional drilling and “islands” when technically advisable in irrigated agricultural soils and sensitive or unique biological areas.
- **Objective 1.4:** Analyze potential impacts on agricultural, natural, and cultural resources, as appropriate.
- **Objective 1.5:** Require appropriate mitigation and monitoring for environmental issues associated with developing renewable energy facilities.
- **Objective 1.6:** Encourage the efficient use of water resources required in the operation of renewable energy generation facilities.
- **Objective 1.7:** Assure that development of renewable energy facilities and transmission lines comply with Imperial County Air Pollution Control District’s regulations and mitigation measures.

Goal 2: Encourage development of electrical transmission line along routes which minimize potential environmental effects.

- **Objective 2.1:** To the extent practicable, maximize utilization of IID’s transmission capacity in existing easements or rights-of-way. Encourage the location of all major transmission lines within designated corridors, easements, and rights-of-way.
- **Objective 2.2:** Where practicable and cost-effective, design transmission lines to minimize impacts on agricultural, natural, and cultural resources, urban areas, military operation areas, and recreational activities.

Goal 8: Develop overlay zones that will facilitate the development of renewable energy resources while preserving and protecting agricultural, natural, and cultural resources. Development of overlay zones shall include coordination with federal, state, county, tribal governments, educational entities, and public and local industries.

- **Objective 8.1:** Allow for County review with appropriate development and performance standards for development of local resources within the overlay zones.
- **Objective 8.2:** Promote the exchange of information concerning renewable energy development to be circulated between industry, County staff, and the public.
- **Objective 8.3:** Provide the public with an adequate opportunity to obtain information on the current status of renewable energy development and to provide input on matters related to the development of renewable energy resources.

SECTION 3 Project Background

This section discusses the natural and cultural settings of the Project area. The information presented below has been largely adapted from the Cultural Resources Assessment for the Heber 1 Solar Project prepared by Chronical Heritage for Catalyst Environmental Solutions (Clark and Torres 2024).

3.1 Environmental Setting

3.1.1 Physiography and Geology

The proposed Project is within the Colorado Desert of Imperial County, the largest and most arid subdivision of the Sonoran Desert and noted as one of the hottest and most arid environments in North America (Deppe et al. 2024).

Specifically, the Project is within the Salton Trough, which is at the southern extent of the Colorado Desert and a major physiographic and geologic feature. The Salton Trough is an extensive topographic and structural depression extending from the Gulf of California to approximately 130 miles (209 kilometers) northwest through Coachella Valley to the summit of San Geronio Pass. Located to the south of the Salton Trough, the Gulf of California is separated from the trough by a roughly 11- meter (36 feet) tall delta of the Colorado River. This delta slopes gradually down to the north to about 226 feet below mean sea level (bmsl) at the Salton Sea, then rises gradually through the Coachella Valley. The Project extends over a wide range of elevations, from sea level to 160 bmsl.

The Salton Trough developed during the late Cenozoic Era (approximately 34 million of years ago [MYA]) resulting from tectonic forces that continue to the present day, separating the Baja California peninsula from mainland Mexico. These forces manifest through numerous fault systems (including the San Andreas Fault) that have resulted in a deepening of the rift that, through several millennia, has contained bodies of either freshwater or saltwater. Intrusions of seawater into the rift initially occurred during the late Cenozoic Era, during the Miocene and Pliocene epochs (between 23 and 2.6 MYA) (National Park Service [NPS] 2021) (Figure 3-1).

Subsequently, during the early Pleistocene epoch (approximately 2.6 MYA), a growing alluvial fan of the Colorado River delta sealed off the upper portion of the rift from the sea, creating the Salton Trough basin. The lower portion became what is today the Gulf of California. After this division of the rift, episodic flooding of the Colorado River occasionally diverted into the Salton Trough basin, long enough to temporarily fill it with fresh water, creating a large lake, known historically as Lake Cahuilla. Often, after episodes of flooding, the river eventually returned to its regular channel, into the Gulf of California, and the lake would then gradually empty by evaporation. This cycle occurred several times during the Pleistocene and subsequent Holocene epoch (2.6 MYA to 11,700 years ago). Lake Cahuilla, when full or even nearly full, would have encompassed the smaller present-day Salton Sea and covered much of the Imperial Valley, creating an extensive (temporary) lacustrine environment (Apple et al. 1997; Schaefer 2006; Waters 1983).

Geologically, a sequence of marine, non-marine, and lacustrine-associated geologic, sedimentary formations that extend deep beneath the Salton Trough document the geologic history of the rift described above. The Split Mountain Formation, deposited in the rift during the late Miocene epoch (between 11.6 and 5.3 MYA),

consists primarily of nonmarine sediments of terrestrial (alluvial and colluvial) origin. At the beginning of the subsequent Pliocene epoch (between 5.3 and 2.6 MYA), marine sediments of the Imperial Formation began to deposit atop the Split Mountain Formation, indicating the first marine transgression into the rift depression (Dorsey et al. 2007). Later in the Pliocene, deposition of the nonmarine sediments contained in the Palm Spring and Canebrake Conglomerate formations indicate terrestrial contributions to the rift depression. Deposition of these latter two formations may have been at least partially contemporaneous with the deposition of the Imperial Formation marine sediments. Possibly beginning as early as the late Pliocene, the lacustrine sediments contained in the Borrego Formation indicate the end of marine deposition in the rift, the creation of the Salton Trough, and the presence of a freshwater lake. These sediments mostly overlie the Palm Spring and Canebrake Formations, however, in some instances, they appear to also interfinger with them, possibly indicating some contemporaneity with the deposition of these formations.

During the Pleistocene (between 2.6 MYA and 11,700 years ago), deposition of the non-marine Ocotillo Conglomerate Formation appears to have occurred contemporaneously with deposition of the lacustrine Brawley Formation. The contemporaneous deposition of these formations likely indicates that a Lake Cahuilla-like body of water was intermittently present in the Salton Trough basin during this period. These formations are subsequently overlain by Holocene-age lacustrine and alluvial deposits, indicating that these conditions continued throughout the period.

Another prominent feature of the Salton Trough is the Salton Butte Complex. This complex consists of a 4.3 miles (7 kilometers) long row of five lava domes: Mullet Island, North Red Hill, Obsidian Butte, Rock Hill, and South Red Hill. These domes are closely associated with a fumarolic field and a geothermal field, with evidence of buried volcanoes underground. In precontact times, Obsidian Butte, the westernmost dome, was a significant regional source of obsidian. Recent research indicates that the volcano erupted during the late Holocene, about 2500 years ago (Dibblee 2008; Schmitt et al. 2012, 2013, 2019; Wright et al. 2015). However, due to the filling of the Salton Basin at least six times during the Holocene, Obsidian Butte would have been difficult to reach during the Late Precontact period for varying periods of time (Schmitt et al. 2013; Waters 1983; Wright et al. 2015).

According to USDA Soil Survey, the project area soils are primarily made up of Imperial-Glenbar silty clay loams complex with some Imperial silty clay. Imperial-Glenbar soils are somewhat poorly draining soils with high runoff. These soils can be found in floodplains and lakebeds and originate from alluvium over ancient fluviomarine deposits (Zimmerman 1981). They contain a maximum of 25% calcium carbonate and maximum 2% gypsum and can vary between non-saline to very slightly saline. Imperial silty clay can be found in basin floors and originate from clayey alluvium derived from mixed and/or clayey lacustrine deposits derived from mixed. It is a moderately well drained soil that ranges between slightly saline to moderately saline. Imperial silty clay contains a maximum of 5% calcium carbonate (Natural Resources Conservation Service n.d.).

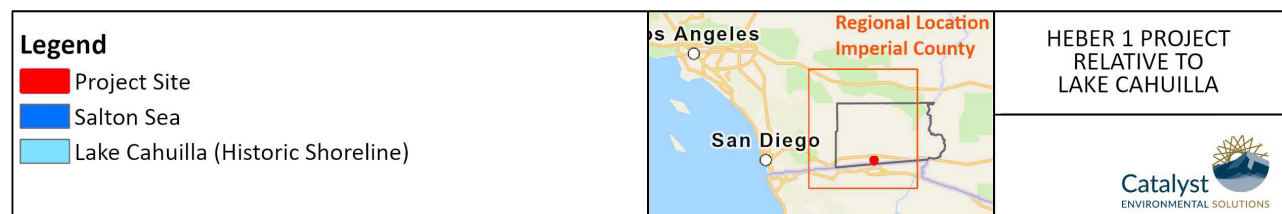
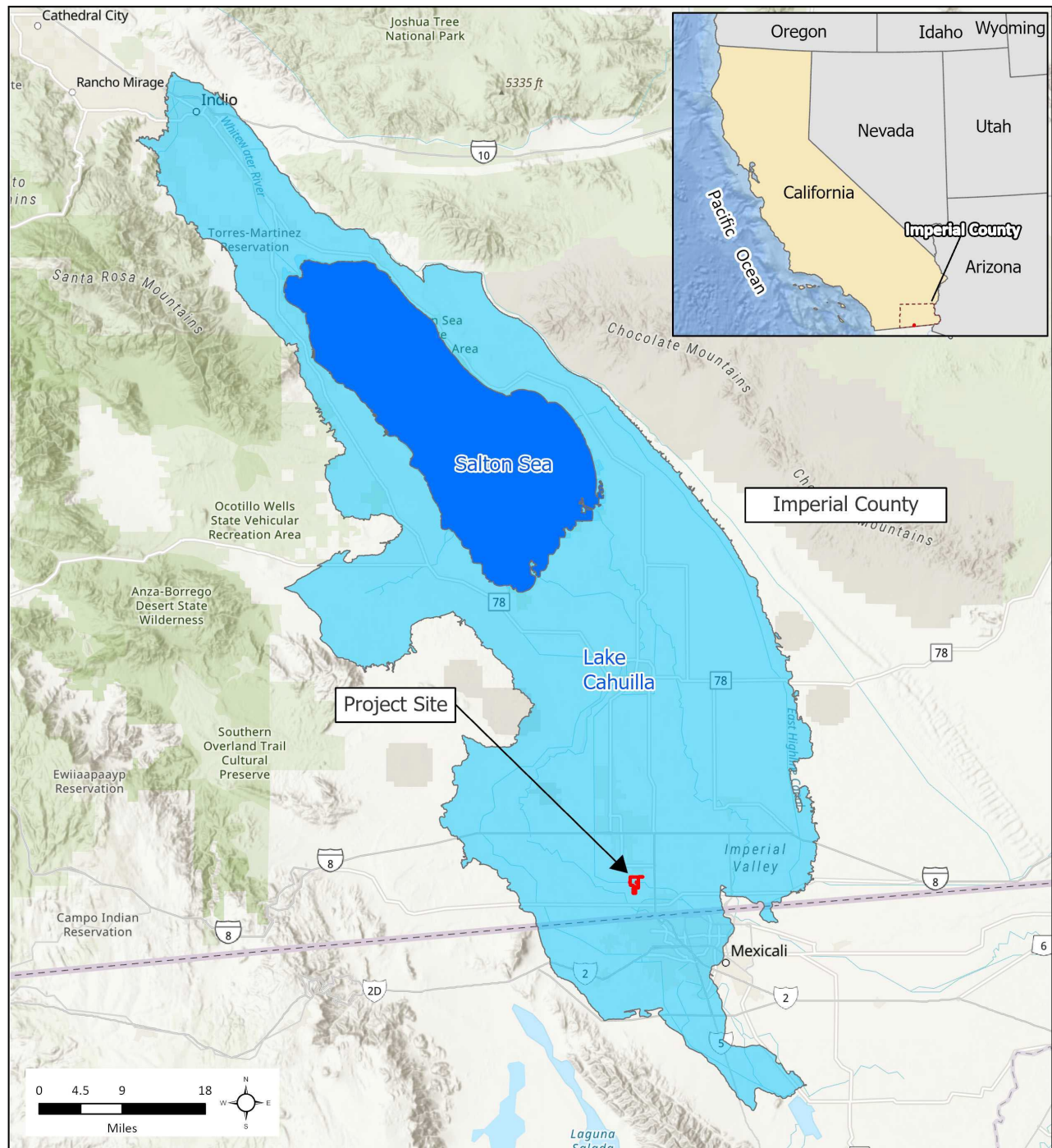
3.1.2 Climate and Hydrology

Conditions within the Colorado Desert are among the hottest found in the U.S. and North America. Average daily temperatures range from the low 40 degrees Fahrenheit (°F) in winter to 105°F in summer, although summer temperatures can reach into the 120s°F. A high of 127°F was recorded at the Gold Rock Ranch station, approximately 15 miles northwest of Yuma, Arizona and 95 miles southeast of the Project area. This region also experiences rapid heat loss at night, resulting in a wide daily temperature variance of approximately 30°F.

Annual rainfall totals within the Colorado Desert are among the lowest in the Sonoran Desert, averaging less than 2 inches (5 centimeters) per year in the Salton Trough and between 2 and 4 inches (5 and 10 centimeters) along the Colorado River though recent summer monsoons have been known to produce more than the average yearly precipitation in a single rainfall event (Crosswhite and Crosswhite 1982). Droughts of up to 60 days are common in this area, and the longest recorded drought lasted for more than three years, with documented rainfall of 0.01 inch (Jaeger 1957; Shreve and Wiggins 1964). Freshwater is found in the form of occasional springs and wells, sporadically located in the numerous seasonal drainages. Current climatic conditions at lower elevations of the Colorado Desert have remained much the same since the late Pleistocene.

Lake Cahuilla (now the Salton Sea) is the most significant hydrological feature in the vicinity of the Project, given its criticality of water supply in ecology, archaeology, and history of the Colorado Desert (Figure 3-1). As described previously, although it is generally accepted that freshwater inundations of the Salton Trough likely began during the Pleistocene epoch, it is documented that during the middle to Late Holocene epoch, Lake Cahuilla filled during natural episodes of Colorado River flooding, and then receded, several times before its last natural desiccation about 300 years before present (B.P.) (Schaefer 1994, 2006; Waters 1983; Wilke 1978). During the Holocene, Lake Cahuilla formed in the Salton Trough when the Colorado River's major flood episodes breached a drainage divide near Cerro Prieto in northern Baja California. The resulting head-cutting diverted all or most of the Colorado River's flow into the Salton Trough. Unchecked, the Colorado River flow would fill the trough to the 40-foot (12-meter) contour, at which point an outflow channel was created. Flow into the trough presumably would have continued until siltation clogged the inflow channel. High evaporation rates would then cause the lake to recede and salinity to increase proportionally.

Stands of Lake Cahuilla at the 40-foot (12-meter) contour were truly huge, covering 2,201 mile² and reaching a maximum depth of 315 feet (96 meters). Higher shorelines have been reported and dated to the Pleistocene (Waters 1983); however, it is not clear that any of these were associated with freshwater lakes resulting from Colorado River diversions (Figure 3-1).



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Figure 3-1. Map depicting the historic shoreline of Lake Cahuilla in relation to the Project.

3.1.3 Flora and Fauna

Although the vegetation communities are like those of the Mojave Desert to the north, the Colorado Desert's bimodal pattern of rainfall allows for greater diversity. Species commonly found throughout both deserts are varieties of agave (*Agave* spp., including the desert agave or century plant [*Agave deserti*]), creosote (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), and saltbushes (*Atriplex* spp.). However, the Sonoran Desert is effectively outlined by the distribution of ocotillo (*Fouquieria splendens*), and the Mojave Desert by Joshua trees (*Yucca brevifolia*). The Sonoran Desert also differs with the presence of frost-sensitive species, trees, and large shrubs.

The Colorado Desert subdivision differs from other Sonoran subdivisions by having mostly small cacti. Creosote scrub is the dominant vegetation community throughout most of the desert, with a greater variety of species occurring along the Colorado River corridor, seasonal washes, and the Salton Sea.

On sandy flats and slopes and desert pavement terraces, the usually sparse vegetation is dominated by creosote bush, white bursage, and brittlebush (*Encelia farinosa*), with saltbushes occurring where the soil becomes more alkaline. Within seasonal washes, vegetation is more lush and features a greater variety of species. In these washes are small trees, including blue palo verde (*Cercidium floridum*), ironwood (*Olneya tesota*), catclaw acacia (*Senegalia greggii*), and smoke trees (*Psoralea arguta*). Shrubs such as mesquites (*Prosopis* sp.), burrobush (*Hymenoclea salsola* var. *pentalepis*), and desert broom (*Baccharis sarothroides*) also occur along dry water courses. Seeps and oases are marked by the presence of the California fan palm (*Washingtonia filifera*) (MacMahon 1985; Minckley and Brown 1994; Schoenherr 1992).

Active dunes require specialized plant adaptations. The soil is poor and provides unstable ground for rooting, as shifting sands can either bury plants or expose the root systems to the sun. However, the dunes retain moisture from infrequent rainfall. Plants such as the sand dune buckwheat (*Eriogonum deserticola*) and croton (*Croton wigginsii*) have adapted to this environment with a high tolerance of low nutrient conditions and long, horizontal roots that help anchor the plant (MacMahon 1985).

On upper rocky slopes, particularly on the eastern side of the Peninsular Ranges, are found the cactus scrub community, consisting of succulents and other drought-resistant plants. The eastern slopes of the Peninsular Ranges are marked by distinctive banding of vegetation communities, with cactus scrub in the lower elevations that are replaced by desert chaparral higher on the slopes. Cactus scrub can occur with creosote scrub and include brittlebush, ocotillo, and a variety of cacti (*Opuntia* sp.). Desert chaparral consists of open stands of big berry manzanita (*Arctostaphylos glauca*), western mountain mahogany (*Cercocarpus montanus*), and California buckwheat (*Eriogonum fasciculatum*) (Raven 1966; Schoenherr 1992). In the desert slopes of the Transverse Ranges, chamise is often a dominant species in the desert chaparral community (Schoenherr 1992).

Due to the high diurnal temperatures, most desert mammals have adapted by spending much of the day underground in burrows or aestivating. Small burrowing rodents are particularly abundant in sandy plains. Animals commonly found in dry desert lands include black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), kit fox (*Vulpes macrotis*), and a variety of rodents such as the round-tailed ground squirrel (*Spermophilus tereticaudus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), desert and Merriam kangaroo rats (*Dipodomys merriami*), and desert pocket mouse (*Perognathus penicillatus*). Larger mammals are usually limited to desert bighorn sheep (*Ovis Canadensis nelsoni*), Sonoran pronghorn antelope (*Antilocapra americana sonorensis*), and coyote (*Canis latrans*). Several species of bat are found, including the California leaf-nosed bat (*Macrotus californicus*).

In the sandy plains and dunes of the Colorado Desert regions, there are several species of reptiles with unique adaptations to sandy environments, including fringe-toed lizard (*Uma inornata*, *U. notata*), flat-tailed horned lizard (*Phrynosoma m'calli*), banded sand snake (*Chilomeniscus cinctus*), and sidewinder (*Crotalus cerastes*). Other reptiles include desert tortoise (*Gopherus agassizii*), chuckwalla (*Sauromalus obesus*), desert iguana (*Dipsosaurus dorsalis*), and snakes such as the rosy boa (*Lichanura trivirgata*) and western diamondback (*Crotalus atrox*) (Schoenherr 1992; Turner and Brown 1994).

The riparian vegetation along the Colorado River and the Salton Sea attracts and supports a variety of birds, including migratory birds such as ducks and geese. Resident species include roadrunner (*Geococcyx californianus*), mourning dove (*Zenaida macroura*), Gambel's quail (*Callipepla gambelii*), and black-tailed gnatcatcher (*Poliophtila melanura*). Also found are numerous bats, a variety of rodents, and other varieties of large and small game (Minckley and Brown 1994). Migratory birds commonly found at the Salton Sea include pelicans, cormorants, and eared grebes.

Native fish species found in the Salton Sea are native razorback sucker and bonytail chub, along with several species of sport fish, including tilapia (*Tilapia spp.*), croaker (*Bairdella icistia*), and sargo (*Anistramus davidsoni*). The desert pupfish (*Cyprinodon macularius*), now an endangered species, is also found in the Salton Sea.

3.2 Cultural Setting

The proposed Project lies within the western boundary of the Colorado Desert, a subdivision of the Sonoran Desert, and is 28.5 miles (45.8 kilometers) south of the Salton Sea. The Project area is within the boundaries of ancient Lake Cahuilla, a culturally significant area within the Salton Trough (Rockwell et al. 2022). The archaeological background presented here draws on current knowledge of the Colorado Desert region and the Salton Trough.

3.2.1 Archaeological Background

The archaeological chronological framework for the Colorado Desert region follows the outline proposed by Schaefer (1994), which integrates data from the adjacent Mojave Desert to the north and the San Diego region to the west. This approach reflects the availability of extensively documented archaeological records in those areas. In contrast, the archaeological narrative of the Colorado Desert remains largely shaped by early twentieth-century interpretations, particularly those of Malcolm Rogers (1939, 1945, 1966), whose work spanned both the Colorado Desert and the San Diego region.

While these early chronologies continue to inform current models, it is important to recognize that they do not fully reflect the long-standing and complex histories of Indigenous peoples in the region. As such, current understandings of early occupation in the Colorado Desert continue to rely on cross-regional comparisons, though there is increasing recognition of the need to incorporate Indigenous perspectives and knowledge systems into these frameworks. Overall, culturally the passage of time is denoted and reflected in technological advances in toolmaking, distinctive material types, stylistic changes, and artwork applied to utilitarian and ceremonial objects (Aikens et al. 2011).

3.2.1.1 Paleoindian Period (ca. 12,000-10,000 Before Present [B.P.]

The earliest documented precontact sites in California date to the Paleoindian Period (12,000-10,000 B.P.) during the Late Pleistocene. In the western United States people during this period produced large, fluted

spear and projectile points (Fluted-Point Tradition), which are usually identified at sites associated with big game hunting. Paleoindian sites reflecting the Fluted Point Tradition, such as Clovis and Folsom, have been documented in the Great Basin regions and the northern Desert Southwest area, including the Mojave Desert (Moratto 1984:79–88).

In the Mojave Desert, although absolute dating remains limited, the Paleoindian Period is assumed to span approximately 12,000 to 10,000 B.P. (Sutton et al. 2007:234–236). Elsewhere in California, most of the evidence for the Fluted-Point Tradition derives from isolated occurrences of fluted points that have been identified scattered across the state (Dillon 2002; Rondeau et al. 2007). In the Colorado Desert, fluted points have been documented primarily as isolated occurrences (e.g., Davis et al. 1980:150; Kline 2014). This is like observations in the mountainous regions of southern San Diego County (Kline and Kline 2007). Additional observations have been made farther south in Baja California (Des Lauriers 2008; Hyland and Gutierrez 1995).

The beginning of the San Dieguito Tradition or Complex, is often associated with artifact assemblages distinct from that of the Fluted-Point Tradition and is also assumed to date to the Paleoindian Period. In California (Alta California), the San Dieguito Tradition has been documented primarily in the coastal areas of San Diego County (Carrico et al. 1993; Rogers 1966; Warren 1966, 1967; Warren and True 1961) and, to a lesser degree, in the Mojave Desert (Sutton et al. 2007) and Colorado Desert (Rogers 1939, 1966; Schaefer 1994; Warren 1967). In the Mojave Desert, Sutton and colleagues (2007:236) assign the San Dieguito Complex to the early Archaic Period during the Early Holocene. Warren (1967) dates the San Dieguito Tradition as beginning circa 10,000 B.P. and ending sometime between 8500 and 7200 B.P. (Warren 1967, 1968:4; Warren et al. 1998; Warren and Ore 2011). This tradition is characterized by an artifact inventory consisting almost entirely of flaked stone biface and scraping tools, but lacking the distinctive fluted points associated with the Fluted-Point Tradition. The subsistence system or emphasis of the San Dieguito Tradition, though not yet entirely agreed upon, appears to have been oriented towards hunting rather than gathering, based on the predominance of primarily hunting-associated tools in recovered artifact assemblages (Warren 1967, 1968).

Minimal evidence exists for the Fluted-Point Tradition in the general vicinity of the Project area, with two isolated flute points identified in the Colorado Desert (Davis et al. 1980; Kline 2014) and a third point recorded in the mountains of San Diego County (Kline and Kline 2007). In contrast, the San Dieguito Tradition is relatively well-documented and located primarily in the San Diego area. The most substantial evidence for this tradition derives from a stratified archaeological site, the C.W. Harris Site (CA-SDI- 149/316/4935B), in western San Diego County along the San Dieguito River. The C.W. Harris Site served as the foundational location for defining the San Dieguito Tradition (Rogers 1939, 1966; Vaughan 1982; Warren 1966, 1967, 1968; Warren and True 1961). Diagnostic artifacts associated with this tradition include elongated bifacial knives, scrapers, crescentic, and Silver Lake and leaf-shaped projectile points (Carrico et al. 1993; Knell and Becker 2017; Rogers 1966; Vaughan 1982; Warren 1966, 1967; Warren and Ore 2011; Warren and True 1961). The Harris Site also yielded the earliest calibrated radiocarbon date of approximately 9968 B.P., associated with a subsurface San Dieguito assemblage (Warren et al. 1998; Warren and Ore 2011). A slightly more recent date of 9130 B.P. was recorded at site CA-SDI-316, also from a San Dieguito-associated subsurface layer (Cooley 2013). Additionally, a site in the southern mountains of San Diego County produced artifacts—specifically complete elongated bifacial knives and/or projectile points—that closely resemble those from the Harris Site, suggesting further evidence of the San Dieguito Tradition in the region (Pignuolo 2005). Although Rogers (1939, 1966) has described occurrences of sites and artifacts attributable to the San Dieguito Complex in the Mojave and Colorado Desert areas, the ability to accurately determine the antiquity of these artifacts and sites by radiometric dating

methods has proven to be problematic (Schaefer and Laylander 2007:247; Sutton et al. 2007:237; Warren 1967:179).

Consequently, the radiometric dating of the artifacts and their context at the C.W. Harris Site has, for several decades, been the principal means of ascertaining the age of these similar desert assemblages (Warren 1967). In the Mojave Desert area, the San Dieguito Complex has been largely subsumed under the Lake Mojave Complex (Sutton et al. 2007:236). Recently, calibrated radiocarbon dates from several Lake Mojave Complex associated sites have produced dates of similar antiquity to those from the C.W. Harris Site (Sutton et al. 2007:235) (i.e., ca. 10,000-9000 B.P.). In the Mojave Desert area, these Lake Mojave Complex sites are frequently associated with glacial lakes that were still present at the end of the Pleistocene and the beginning of the Holocene. Such glacial-related lacustrine features were generally not present in the more southerly Colorado Desert area. However, given the identification of Paleoindian Period and/or Lake Mojave Complex-associated projectile points in the Salton Basin it is possible that this basin, too, may have been inundated, at least periodically, during this earlier period (Apple et al. 1997; Wahoff 1999).

3.2.1.2 Early Archaic Period (ca. 10,000-4000 B.P.)

The Early Archaic Period, marking the transition from the relatively cool and wet conditions of the early Holocene, is generally characterized by a shift from hunting-dominated subsistence strategies to a broader, more generalized economy. This included an increased emphasis on gathering and the use of grinding tools and seed-processing technologies. In regions like the Mojave Desert, early Archaic sites are relatively common and often contain dart points alongside a growing presence of ground stone tools such as manos and metates.

In contrast, the Colorado Desert has yielded limited archaeological evidence definitively attributable to the Early Archaic Period. However, isolated observances suggest the potential for earlier and more widespread occupation than previously recognized. For instance, projectile points associated with the Lake Mojave Complex, or the Paleoindian Period, have been observed in the Salton Basin (Apple et al. 1997; Cleland 2004 Wahoff 1999), as well as at site CA-SDI-7074 in the mountains of southeastern San Diego County (Williams 2014).

A notable discovery in the Salton Basin occurred during investigations at the Salton Sea Test Base, where an assemblage of large projectile points, stylistically similar to early Archaic types like Pinto and Elko points known from the Mojave Desert, was identified (Apple et al. 1997; Wahoff 1999). Although no radiocarbon dates were obtained, typological analysis suggests these artifacts may date to the early Archaic.

Further evidence comes from site CA-SDI-7074, located in the eastern foothills of the Laguna Mountains approximately 40 miles (64 kilometers) to the southwest of the Project. Excavations there uncovered over 100 subsurface thermal features, many interpreted as earth ovens used for agave roasting (Williams 2014). While most of the features date to the Late Precontact Period, five deeply buried ovens yielded radiocarbon dates between 9600 and 8590 B.P., indicating much earlier use of agave than previously documented. This has led to a reconsideration of the local chronology for the onset of the early Archaic. Additionally, the recovery of a single Elko-style projectile point at the site supports early to mid-Archaic use (Williams 2014:151).

3.2.1.3 Late Archaic Period (4000 – 1500 B.P.)

Evidence for Late Archaic occupation (beginning around 4000 B.P.) in the western Colorado Desert remains limited but informative. One of the few studies documenting use during this period was conducted by Love and

Dahdul (2005) in the northern Coachella Valley of the Salton Basin. Several sites, possibly related to ancient stands of Lake Cahuilla, were radiocarbon dated to between 3000 and 2000 B.P. (Love and Dahdul 2005; Schaefer and Laylander 2007:249). These dates suggest a pattern of use tied to the fluctuating hydrology of the region.

Additional Late Archaic evidence comes from the Indian Hill Rockshelter (CA-SDI-2537) in Anza-Borrego Desert State Park and a rock shelter in Tahquitz Canyon near Palm Springs. The Indian Hill site contained dart-sized projectile points, ground stone tools, rock-lined caches, and inhumations, one of which was radiocarbon dated to 4070±100 B.P. (McDonald 1992; Schaefer 1994; Wilke and McDonald 1989). Until recently, it was the oldest dated archaeological site in the region. The Tahquitz Canyon site, though undated, exhibited an artifact assemblage similar to that of Indian Hill, supporting its assignment to the Late Archaic (Bean et al. 1995; Schaefer and Laylander 2007:247).

While evidence for broader settlement patterns during the Archaic Period in the Colorado Desert is sparse, the location of Late Archaic sites in proximity to ancient Lake Cahuilla suggests that this hydrological feature influenced regional habitation. Sites like Indian Hill and Tahquitz Canyon also indicate that nearby mountain environments were utilized by prehistoric groups during the middle to late Archaic.

3.2.1.4 Late Precontact/Protohistoric Period (1500 – 300 B.P.)

The Patayan Complex represents the Late Precontact and Protohistoric periods in the area. These periods date from approximately 1500 B.P. until the American expansion into the area at the turn of the nineteenth century. The Protohistoric Period encompasses a protracted 300-year-long period of sporadic European and non-indigenous exploration and colonization that had little effect on aboriginal lifeways in the southern California deserts.

In contrast to the gradual transitions of the Late Archaic Period, the onset of the Late Precontact Period (ca. 1500–1300 B.P.) was marked by rapid and substantial changes. The scale and pace of these developments suggest a significant shift in subsistence strategies during this time. Archaeological evidence points to several key transformations: the possible silting-in of coastal lagoons, the introduction and local production of ceramics, increased storage of staple food resources such as mesquite, acorns, and pinyon nuts, and a shift in mortuary practices from inhumation to cremation. Along the Colorado River, these changes also included an expansion of subsistence activities and the adoption of floodplain horticulture, reflecting broader shifts in economic and settlement patterns (Gallegos 1995 2002; McDonald and Eighmey 1998; Schaefer 1994).

In the Coachella Valley and Salton Basin area, the Late Precontact Period is associated with periodic infilling and emptying of Lake Cahuilla. This substantial hydrological feature is seen as recurrently altering the course of human settlement in the area during this period (Schaefer and Laylander 2007:250–251). During times of lake absence, settlement appears to have been characterized by the occupation of semi-sedentary villages along major water courses and around springs, with adjacent montane areas seasonally occupied to exploit mesquite, acorns, and pinyon nuts. Tahquitz Canyon, located in the mountains west of the Salton Basin, is recognized as a significant population center during the Late Precontact Period (Bean et al. 1995).

Schiffer and McGuire (1982:216–222) and Waters (1982a) used a chronology originally proposed by Rogers (1945) to divide the Late Precontact Period in the Colorado Desert area based on the progression or changes in development of ceramic types. Referring to the period as “Patayan” (instead of the term “Yuman,” used by

Rogers), three phases were defined that were correlated with fillings and desiccations of Lake Cahuilla. These phases include:

- **Patayan I** begins at approximately 1200 B.P. with the introduction of pottery into the Colorado Desert. Sites dating to this phase appear to be limited mostly to the Colorado River area.
- **Patayan II** coincides with an infilling of Lake Cahuilla around 950 B.P. As described previously, the lake covered much of the Imperial Valley and created an extensive lacustrine environment that is thought likely to have attracted people from the Colorado River area. New pottery types appear as a result of local production along the lakeshore and technological changes in the Colorado River area. Subsequently, Lake Cahuilla experienced several fill/recession episodes before its final desiccation.
- **Patayan III** initially begins around 500 B.P. (A.D. 1500) as Lake Cahuilla receded. Colorado Buff ware became the predominant ceramic type during this period across the Colorado Desert and along the Colorado River. Several Patayan II ceramic types persisted during this period with new traits including reinforced rim bands and a new vessel form, the high neck, small-mouthed olla (Waters 1982a, 1982b).

This chronological scheme has served as a useful tool for organizing archaeological assemblages in the area. However, Schaefer and Laylander (2007:252–253) noted that data obtained from more recent archaeological investigations highlight some serious discrepancies with its use (e.g., Hildebrand 2003; Haynes and Harry 2022).

As previously discussed, the beginning of the Late Precontact Period in the San Diego County region is marked by the introduction of new tool technologies and noticeable shifts in subsistence practices. Some of these changes may be explained by population movements within the last 2,000 years. Yuman-speaking groups are known to have occupied the Gila and Colorado River drainages in what is now western Arizona for at least 2,000 years (Moriarty 1968). Over time, these groups appear to have migrated westward through the Colorado Desert and the Peninsular Ranges to the coast.

Analysis of materials from the Spindrift Site in La Jolla led Moriarty (1966, 1967) to identify a preceramic Yuman phase. Based on artifact analysis and limited radiocarbon dating, occupation of the San Diego coastline by Yuman-speaking groups lacking ceramic technology is estimated at approximately 2000 B.P. By around 1200 to 1300 B.P., ceramic technology had diffused into the coastal area from the eastern deserts. While cultural traits may have been shared with earlier populations in eastern San Diego County prior to 2000 B.P., Yuman influence is more clearly reflected after 1300 B.P., as indicated by the introduction of small projectile points, ceramics, cremation practices, and the use of Obsidian Butte obsidian from the Salton Basin.

Two distinct archaeological complexes have been proposed for the Late Precontact Period in what is now San Diego County: the Cuyamaca Complex and the San Luis Rey Complex. The Cuyamaca Complex was defined by True (1970) following excavations at Cuyamaca Rancho State Park and review of collections at the San Diego Museum of Man, representing Late Precontact occupation in southern San Diego County. In contrast, the San Luis Rey Complex, identified by Meighan (1954), is associated with the northern part of the county. These complexes are primarily differentiated by the presence, absence, or relative frequency of specific diagnostic artifacts. For example, Cuyamaca Complex assemblages typically include both Cottonwood Triangular and Desert Side-notched arrow points, whereas Desert Side-notched points are rare or absent at San Luis Rey

Complex sites (Pignuolo 2001). Use of Obsidian Butte obsidian is notably higher in Cuyamaca Complex sites, along with greater prevalence of ceramics, further distinguishing the two complexes. Although ceramics are present during the Late Precontact Period throughout the region, pottery occurs earlier in time and appears to be somewhat more specialized in form at Cuyamaca Complex sites. Burial practices at Cuyamaca Complex sites are almost exclusively cremations, often in special burial urns for interment. In contrast, archaeological evidence from San Luis Rey Complex sites indicates use of both inhumation and cremation. Based on ethnographic data, it is now generally accepted that the Cuyamaca Complex is associated with the Yuman Diegueño/Kumeyaay and the San Luis Rey Complex with the Shoshonean Luiseño/Juaneño.

In contrast, numerous Late Precontact Period sites, attributable to the San Luis Rey or Cuyamaca complexes, have been identified towards the inland foothill areas of the region (e.g., Carrico and Cooley 2005; Chace and Hightower 1979; Cooley and Barrie 2004; McCown 1945; McDonald et al. 1993; Raven-Jennings and Smith 1999; Willey and Dolan 2004).

3.2.2 Ethnographic Review

The proposed Project area lies within a region historically occupied and utilized by several culturally and linguistically distinct Native American groups. This area reflects the overlapping traditional territories of the Cahuilla people to the north and the Ipai-Tipai (Kumeyaay) peoples to the south. The Desert Cahuilla are represented today by the Torres Martinez Desert Cahuilla Indians. The Ipai-Tipai, part of the greater Kumeyaay Nation, are represented by 12 federally recognized tribes located in San Diego County: Barona Band of Mission Indians, Campo Band of Diegueño Mission Indians, Ewiiapaayp Band of Kumeyaay Indians, Inaja-Cosmit Band of Indians, Jamul Indian Village, La Posta Band of Diegueño Mission Indians, Manzanita Band of the Kumeyaay Nation, Mesa Grande Band of Mission Indians, San Pasqual Band of Diegueño Mission Indians, Lipay Nation of Santa Ysabel, Sycuan Band of the Kumeyaay Nation, and Viejas Band of Kumeyaay Indians.

As such, these groups are discussed below, however, in this overview it is important to note that this section is not comprehensive. Ongoing conversations with Tribal representatives and other Native communities will continue to inform our understanding of this region's cultural history.



Figure 3-2. Map showing ethnographic territory, Project area in red. Redrawn from the Handbook of North American Indians, Volume 8 (1978:ix)

3.2.2.1 Cahuilla (ʔíviłuwenetem Meytémak)

The Project area lies at the southeastern extent of lands traditionally used by the Cahuilla people (ʔíviłuwenetem Meytémak), whose presence in this region long predates European and other non-indigenous arrivals (Bean 1978). The Cahuilla speak a language of the Takic-Cupan branch (Shoshonean) of the Uto-Aztecan language family and have deep cultural, spiritual, and subsistence connections to the current Project area (Kroeber 1925; Schaefer 2006). Prior to colonial disruption, the Cahuilla lived across three distinct regions: mountain, desert, and valley, each with their own ecological characteristics and linguistic distinctions (Figure 3-2). These diverse environments, including the Santa Rosa and San Jacinto Mountains to the west and the Coachella Valley to the east, which supported rich and varied lifeways that reflected a deep understanding of the land.

The diversity of Cahuilla territory reflects the range of environmental habitats for inland southern California. Topographically, their territory ranged from the summit of the San Bernardino Mountains to the Coachella Valley and Salton Sink. Ecological habitats included the full range of mountains, valleys, passes, foothills, and desert areas. Villages were typically in canyons or on alluvial fans near water and food resources, and a village's lineage owned the immediately surrounding land (Bean 1978). Well-developed trails were used for hunting and travel between settlements. Village houses ranged from brush shelters to huts 15 to 20 feet (4.5 to 6 meters) long. Important plant foods exploited from the Cahuilla's diverse habitat included mesquite and screw beans, pinyon nuts, and various cacti. Other important plant foods included acorns, various seeds, wild fruits and berries, tubers, roots, and greens. Women were instrumental in the collection and preparation of vegetal foods. The Cahuilla maintained their cultural and territorial integrity well into the 19th century, in part due to the remoteness of their homelands from early non-indigenous centers, such as the missions and military outposts (Bean 1978). However, the arrival of American and other non-indigenous settlers around 1850, along with the construction of transportation routes, began to forcibly displace Cahuilla people from the area (Doody and Meltzer 2012). Despite this, many communities persisted, with at least 17 known Rancherias in the Coachella Valley at that time. The Desert Cahuilla, notably, developed an effective and successful desert-adapted lifestyle.

Cahuilla society was intricately connected to the land. Their knowledge of plant and animal resources supported sustainable practices such as the use of granaries for mesquite beans and acorns, stone-lined ovens for roasting roots, and ceramic ollas for seed storage. Basketry and pottery were not only utilitarian but also expressions of cultural identity and artistry. The Rancheria system, consisting of semi-permanent villages, supported stable community life and preserved clan-based social and governance structures.

Lake Cahuilla, when present, provided an abundance of fish, waterfowl, and other resources, supporting a seasonal cycle of life along its shores. As the lake filled and receded over time due to shifts in the Colorado River, Cahuilla communities adapted their lifeways, accordingly, shifting between lacustrine and desert-based subsistence strategies. Archaeological evidence from the Late Precontact Period suggests the presence of domesticated crops and cultural connections to broader regional traditions, including the Patayan complex (Schaefer and Laylander 2007). The Cahuilla's ability to adapt to environmental change, while maintaining a distinct cultural identity rooted in place, reflects a profound relationship. The project area lies at the southeastern extent of lands traditionally used by the Cahuilla people, whose presence in this region long predates European and other non-indigenous arrivals (Bean 1978). The Cahuilla speak a language of the Takic-Cupan branch (Shoshonean) of the Uto-Aztecan language family and have deep cultural, spiritual, and subsistence connections to the current Project area (Kroeber 1925; Schaefer 2006). Prior to colonial disruption,

the Cahuilla lived across three distinct regions: mountain, desert, and valley, each with their own ecological characteristics and linguistic distinctions. These diverse environments, including the Santa Rosa and San Jacinto Mountains and the Coachella Valley to the east, which supported rich and varied lifeways that reflected a deep understanding of the land.

Schaefer (2006:22) states that, “[O]ral tradition also indicate that when Lake Cahuilla dried up, it was the mountain people who resettled the desert floor. The time of Lake Cahuilla is also best documented in the oral histories of the Cahuilla, both regarding settlement patterns, song cycles, and the effects of Lake Cahuilla on patrilineal clan segmentation. According to Strong (1929:36), “the derivation of the term Cahuilla is obscure, and it is regarded by the Indians to be of Spanish origin.”

The earliest Spanish contact with the Cahuilla may have been with the Juan Bautista de Anza expedition trips in 1774 and 1777. The route followed San Felipe Creek adjacent to Carrizo Creek and then through Borrego Springs, up into the San Jacinto Mountains (Pourade 1962:164; Schaefer 2006:23). The impact of the Spanish mission system and colonization was much less immediate and profound among the Cahuilla compared to Native American groups residing along the coast. It was not until 1819, after the establishment of the San Bernardino estancia and cattle ranch at San Gorgonio, that a more direct Spanish influence was felt. By 1823, members of the Romero Expedition documented that the Cahuilla at Toro were growing corn and melons and were already familiar with the use of horse and cattle, indicating a familiarity with Hispanic practices (Bean and Mason 1962).

During the Spanish Period and into the Mexican Period, political leadership became more centralized as Juan Antonio from the Mountain Cahuilla and Chief Cabazon in the desert emerged as central figures (Strong 1929). Juan Antonio’s group played a significant role during the Mexican American War, siding with the Mexicans against the Luiseño, who supported the American invasion. Along with the rise of powerful chiefs and political restructuring, Mexican language, clothing, and food were incorporated into traditional culture during this era.

With the 1848 signing of the Treaty of Guadalupe Hidalgo, the U.S. Government promised to preserve the liberty and property of the inhabitants of California. In 1852, a treaty was drafted to settle land rights issues for the Cahuilla (as well as Serrano and Luiseño). The treaty was never ratified by Congress and the best farming and grazing lands were claimed by Euro-American and other non-indigenous settlers. In addition, Executive Orders enacted in the 1860s and 1870s resulted in the establishment of reservations that substantially reduced Cahuilla land. The result of these orders created a checkerboard of 48 sections of reservation lands spread across the eastern edge of the Santa Rosa and San Jacinto mountains and the Coachella Valley (Cultural Systems Research, Inc. 1983). Although various modifications have occurred over time, this has remained the permanent home of the Cahuilla to date. This overview is not comprehensive. Ongoing consultation with Cahuilla Tribal representatives and other Native communities will continue to inform us of our understanding of this region’s cultural history

3.2.2.2 Tipai/Ipai (Kamia)/Kumeyaay

The Kumeyaay people, historically referred to as Tipai-Ipai or Kamia (also known in earlier ethnographic literature as Diegueño), traditionally occupied a broad and environmentally diverse region spanning from northern Baja California into southern California. This area included coastal, inland, and desert zones, with territory extending from the Pacific coastline to the Colorado River. The Kumeyaay are traditionally divided into three closely related linguistic groups: the Ipai (Northern Kumeyaay), Kumeyaay (including the

Kamia/Kwaaymii), and Tipai (Southern Kumeyaay). These languages are part of the Delta–California branch of the Yuman language family, which also includes the Cocopah (Kwapa or Xawitł kwñchawaay) and Quechan (Kwatsáan) (Langdon 1990; Miller 2013).

As hunter-gatherers and horticulturalists, the Tipai-Ipai/Kumeyaay employed a seasonal strategy, alternating between the mountainous western regions and the eastern desert areas to exploit diverse ecological resources (Cook et al. 1997, Luomala 1978; Schaefer 2006). Their subsistence included the harvesting of acorns, mesquite, agave, and other wild plants; small-scale floodplain agriculture; and fishing from sloughs, lakes, and rivers (Schaefer 2006). These lifeways reflect an extensive understanding of local environments and seasonal patterns, with community movements and resources used carefully calibrated to the availability of food and water.

Like the Cahuilla, the lifeways of the Kumeyaay were shaped by the environmental fluctuations caused by the filling and recession of Lake Cahuilla. Schaefer (2006:26) notes that “Lake Cahuilla figures prominently in the Kamia’s origin [tradition]” (Gifford 1931:75–83), and aside from the Cahuilla, the Kamia possess the only other extensively recorded oral histories tied to the ancient lake. The Kamia/Tipai occupied the southern and eastern margins of Lake Cahuilla and adapted to its dynamic desert fringe, which periodically offered wetland habitats for fishing and agriculture during high stands and arid conditions requiring greater mobility during dry phases (Gifford 1931; Kroeber 1925; Schaefer 2006; Shipek 1982).

Fishing was a critical subsistence activity, particularly in freshwater environments like Lake Cahuilla and associated sloughs. One notable technique involved the use of stone fish weirs that are V- and J-shaped alignments constructed from cobbles to funnel fish into traps in shallow waters (Treganza 1945; von Werlhof 1996; Wilke 1978). These weirs, interpreted by White and Roth (2009) as sophisticated harvesting structures, highlight a detailed understanding of fish behavior and seasonal cycles. They served as low-maintenance, sustainable technologies for capturing species such as razorback suckers and bonytail chub, particularly during spawning near gravelly shorelines. Unlike perishable nets and hooks, stone alignments endure in the archaeological record and reflect Kumeyaay knowledge systems and environmental adaptation (Rose and Bowden-Renna 1998).

The Tipai/Kamia maintained close cultural and political ties with neighboring Yuman-speaking groups, particularly the Quechan of the lower Colorado River. These groups were linked through intertribal exchange networks, with the Kamia acting as intermediaries between desert and coastal peoples via routes such as the Mountain Springs Grade (Cook et al. 1997:9). These routes facilitated the trade of marine shells, obsidian, and foodstuffs, and served as strategic corridors during political conflicts. The Tipai and Quechan were frequently allied in regional power struggles against groups to the north and south (Cook et al. 1997).

Early Spanish contact in the Kumeyaay region may have occurred during Pedro Fagés’s explorations in 1785 or earlier during the Anza expeditions of 1774 and 1777 (Schaefer 2006; Cook et al. 1997). By this period, the Tipai-Ipai/Kumeyaay were actively resisting Spanish incursions and formed part of broader regional opposition to colonial expansion. This resistance reached a pivotal moment in 1775 when Kumeyaay warriors from at least 14 villages attacked and burned Mission San Diego de Alcalá in a coordinated revolt (Carrico 2008:32–33).

Despite Spanish efforts to subjugate and convert local populations through the mission system, many Kumeyaay communities retained their autonomy and resisted missionization. Resistance continued through the Mexican Period (1821–1848), during which additional changes further altered Kumeyaay lifeways. One of the most significant developments was the secularization of the missions in 1835, which dismantled their role

as central labor and religious institutions and redistributed their extensive landholdings to private citizens through the rancho system (Carrico 2008; Farris 1994). While some land grants had occurred earlier, secularization formalized this process and marked the beginning of the Rancho Era.

Secularization displaced many Indigenous people who had been drawn into the mission system. Mission neophytes, no longer able to remain at mission sites, were often forced to labor on Mexican ranchos or retreat into remote areas where traditional lifeways persisted longer. In a few rare instances, former mission residents formed pueblos to maintain community structures within the new colonial framework. One such settlement was the Pueblo of San Pasqual, established in the San Dieguito River Valley by displaced Kumeyaay (Carrico 2008; Farris 1994).

The American annexation of California in 1848 ushered in further displacement and marginalization. The expansion of railroads and Anglo-American settlements during the latter half of the 19th century led to the privatization and fencing of land that had long sustained Indigenous communities. The resulting loss of access to traditional territories severely impacted subsistence patterns, mobility, and cultural practices. Reservations were established ostensibly to protect Native land rights, but in practice, they were often located on marginal lands unsuitable for farming or hunting (Carrico 2008). Many Kumeyaay, like other Native groups, were forced into sedentary lifestyles and increasing dependence on the American economic system as a survival strategy.

Today, despite centuries of colonial disruption, Kumeyaay communities continue to assert cultural sovereignty and maintain connections to their traditional homelands. Oral histories, archaeological sites, and ethnographic records together underscore the enduring relationships between the Tipai-Ipai/Kumeyaay and the landscapes of the Colorado Desert and beyond.



Figure 3-3. Map showing ethnographic territory, Project area in red. Redrawn from the Handbook of North American Indians, Volume 9 (1979:ix)

3.2.2.3 Cocopah (Xawitł Kwñchawaay)

The Cocopah Indian Tribe, also known as the Xawitł Kwñchawaay (“Those Who Live on the River”), Kwapa, or River People, is a federally recognized tribe on the three-part Cocopah Indian Reservation in Arizona (Kelly 1977; Tisdale 1997; Wright and Hopkins 2016). This reservation has two sections on the Mexico-Arizona border, the first a short distance northwest of Yuma and the second to the south along the east bank of the Colorado River. The third section is off the river to the east near the city of Somerton. An additional group of Cocopah people resides west of the Mexico-Arizona border in Baja California in ejidos and colonias (Tisdale 1997) (Figure 3-3).

The Cocopah are Yuman speakers that lived for centuries between the confluence of the Colorado and Gila Rivers and the Colorado River delta in Mexico. Other Yuman speaking tribes that are closely related to the Cocopah include the Halyikwamai, Kumeyaay, and Kohuana (Golla 2011; Wright and Hopkins 2016).

Oral histories of the Cocopah tell of the existence of twin gods that emerged from beneath the water to create the earth, its creatures, things, and customs. However, many of the details of the Cocopah creation were not preserved in oral histories or their song cycles. This is due to their beliefs concerning death, which prevent any direct mention of the deceased, and because informants told ethnographers that they should not share stories that they had only heard, but not formally learned (Gifford 1933; Kelly 1977; Wright and Hopkins 2016).

Archaeological studies have suggested that the Cocopah migrated south from perhaps as far north as the Great Basin sometime between 3,000 and 2,000 years ago. They settled in the lower valleys of the Gila and Colorado rivers, residing there until they were forced south between 1400 C.E. and 1500 by other Yuman speakers, who were displaced by the drying of Lake Cahuilla. Although the Cocopah are hard to distinguish between other Yuman groups within the archaeological record, they associate themselves with the Patayan archaeological tradition. The Patayan Tradition is defined by traditions, lifeways, and material culture, such as household structures, funerary features, and pottery, that archaeologists have attributed to the Cocopah and other Yuman-speakers in the region (Alvarez de Williams 1978; Wright and Hopkins 2016).

Warfare was a common and important activity for the Cocopah that had spiritual origins reaching back to the time of their creation. The Quechan and the Mojave were considered hereditary enemies of the River People, as well as the Yavapai and the Chemehuevi. The Cocomarcopa, Xalychidom, and Akimel O'odham were considered allies (Alvarez de Williams 1978; Wright and Hopkins 2016).

The core of Cocopah traditional territory is within the lower Colorado River and Delta, and was surrounded by a broader area that at times included the lower valleys of the Gila and Colorado rivers. However, their history of long-distance travel and trade gives cause to expand their area of concern significantly, as the Cocopah maintain a particular connection with the Colorado River, north of their territory, and to the Great Bend area of the Gila River. These areas overlapped with other groups. For example, the Cocopah historically shared a fish and shellfish gathering area (Kwurksispeuwahan) with the Hia C'ed O'odham into the late 1920s (Wright and Hopkins 2016). The mountains surrounding their traditional territory are seen as the homes of deities, including Awikwame (Spirit Mountain/Newberry Peak, near Needles), Awikwil (near Laveen, south of Phoenix), Wii Shpa ("Eagle Mountain," Black Butte in Baja California), Sakupai (Mount San Jacinto), and Awichauwas ("Feather Mountain" near San Felipe in Baja California) (Gifford 1933; Wright and Hopkins 2016). Similar other Yuman groups, they have narrative songs that connect oral histories with places in the landscape.

The Cocopah Tribe established their first constitution and a tribal council in 1964 under the Indian Reorganization Act. Between 1956 and 1985, the Cocopah gained legal access to more land, including an additional 4,800 acres through the Cocopah Land Acquisition Act, which also annexed 61 acres near Yuma (North Reservation). Today, the reservation consists of three parcels amounting to 6,527 acres, of which 6,009 acres are trust land west, southwest, and south of Yuma, Arizona. In the 1970s and 1980s, the Cocopah Tribe began initiating economic development on their reservation through the installation of utilities, home construction, and infrastructure development (Tisdale 1997; Wright and Hopkins 2016). The Cocopah Reservation is 13 mi south of Yuma, Arizona and is composed of the East, West, and North Reservation, which border Arizona, California, and Mexico. There are now approximately 1,000 tribal members that live and work on or near the reservations.

During previous large-scale projects with significant environmental impacts, the Cocopah expressed concern for the lack of proper consideration of cultural resources. They stress the importance of considering the landscape as a whole rather than individual resources. They reference the significance of the deserts and

mountains surrounding the Colorado River for resource gathering, travel, and spiritual use, not only by the Cocopah, but also numerous other tribes in the region (Cocopah Indian Tribe 2021).

3.2.2.1 Quechan (Kwatsáan)

Preserved in their oral histories, the Quechan (Kwatsáan) people's ancestral homeland stretched along the Colorado River corridor from what is now Blythe, California down to the current Mexican border. At the beginning of sustained European contact in the seventeenth century, it was noted that the Quechan people numbered in the thousands with the largest concentration of Quechan traditionally living at the confluence of the Colorado and Gila Rivers. However, in 1540, they were not noted in that area when the Alacon and Diaz expeditions reached the confluence (Forbes 1965; Forde 1931). By the subsequent century, Quechan villages existed in the area (Figure 3-3).

Quechan subsistence practices integrated three primary activities: horticulture, fishing, and gathering. Their seasonal cycle followed a pattern tied to the Colorado River's natural rhythms. Throughout winter and spring months, extended family groups resided in established settlements positioned on elevated terraces safe from flooding. When spring floodwaters subsided, these larger communities would fragment into smaller household units that relocated to riverside agricultural areas for the planting season. Following autumn harvest, families would reconvene at the established terrace villages, where they sustained themselves through winter months using stored crops, continued fishing activities, and supplemental wild plant foods (Bee 1983; Forde 1931). The Colorado River served as a reliable protein source through fishing activities during all seasons except for periods of major flooding.

Multiple named settlements were located along the elevated terraces that bordered the lower Colorado River's flood zone. Among these communities, Avi Kwotapai occupied the western riverbank in the region between Blythe and Palo Verde Valley, while Xenu mala vax was positioned on the eastern shore near what is now Ehrenberg, Arizona (Bee 1983). The Quechan and related Yuman-speaking peoples developed extensive trail systems paralleling the Colorado River's course, complemented by interconnected pathways, which linked prominent peaks and other culturally significant geographical landmarks (Hildebrand 2003).

3.2.3 **Historic Background**

3.2.3.1 Spanish (1769-1821) and Mexican (1821-1846), Periods

The history of the region is generally divided into Spanish (1769–1821), Mexican (1821–1846), and American (1846–present) periods. The Spanish Period is marked by the establishment of a mission and presidio on a hill overlooking San Diego Bay in July 1769. The Spaniards introduced non-indigenous European crops, cattle, and other livestock. The Mexican Period began in 1821, when Mexico achieved independence from Spain. During the 1820s, a small village began to form at the base of Presidio Hill that became the Pueblo of San Diego (present-day Old Town). The town served as a market center and port for numerous ranchos in the region that were chiefly employed in cattle raising for the exportation of hides and tallow. In 1846, San Diego was occupied by American troops and officially became part of the United States when the Treaty of Guadalupe Hidalgo formalized the transfer of territory from Mexico to the United States in 1848.

Non-indigenous contact with coastal southern California began as early as 1542, with the voyage of Juan Rodríguez Cabrillo. However, intensive interactions with interior areas only came after the establishment of the Spanish presidio and mission of San Diego in 1769. During the Spanish Period, exploratory probes into

eastern San Diego County were made by Pedro Fagés and others, and the southern immigrant trail came into use by colonists from Sonora. Mission culture may have begun to impact Native culture on the western extreme of the Project APE.

In the 1800s, most travel from Arizona to San Francisco by Mexican soldiers, and later by American settlers, followed Anza's route. The closest point along Anza's route is approximately 9 miles (14.4 kilometers) southwest of the Project area (NPS 2024). Although the historic activity in the area during the early nineteenth century was limited primarily to travel with little settlement or resource exploitation, more intensive activity began in the 1820s, with the onset of limited placer mining in the eastern Colorado Desert. Early Spanish prospectors named the Cargo Muchacho ("loaded boy") Mountains after the gold they found there.

Mexico obtained independence from Spain in 1821. Soon thereafter, California's administrators began to shift their focus away from the Franciscan mission system and toward Hispanic lay settlement of the province. Avenues for foreign trade were opened, and private land grants became more numerous and extended farther inland from the coast.

3.2.3.2 American (1846-present) Period

During the Mexican American War of 1846–1848, California was occupied and subsequently annexed by the United States. From the 1840s through the 1880s, the U.S. Cavalry established a series of camps and forts throughout Arizona, Nevada, and the California desert to protect settlers and immigrants from hostile tribes (Rice et al. 1996). Land ownership was complicated by this transition. The Treaty of Guadalupe Hidalgo, signed in February 1848, obligated the U.S. Government to recognize legitimate land claims in Alta California. Although Mexicans initially made up most of the population, the gold rush after 1849 stimulated large-scale immigration into the region. Despite large land holdings and a strong cattle industry, many Mexican landowners found themselves overextended when the northern California miners' demand for meat dwindled. To pay their taxes and bills, some were forced to offer up their lands at public auction (Garcia 1975:22). Small farmers had difficulty maneuvering through the process and acquiring land (Garcia 1975:16). Settlers increasingly squatted on land that belonged to Mexicans, citing their preemption rights, which was the tradition that squatters had the first opportunity to buy the unimproved, unclaimed land for a fair price before auction (Garcia 1975:22), and squatters increasingly challenged the validity of Spanish-Mexican claims through the Board of Land Commissioners created by the California Land Claim Act of 1851 (Garcia 1975:22-23). Most Californios did not retain their original land holdings by 1860, including Santiago Arguello, who was granted the former Mission San Diego land in 1846 and eventually lost \$24,000 in property (Garcia 1975:24).

Following the establishment of forts throughout the area, the California desert region again opened for exploration and settlement. As part of an effort to establish a railroad route from St. Louis to the Pacific Ocean, the U.S. Government conducted a series of surveys between 1853 and 1855 to identify feasible routes. One of the railroad survey parties, led by Lieutenant R.S. Williamson, included a young geologist, William Phipps Blake, who was the first to identify the Salton Trough as an ancient lakebed (Cory and Blake 1915; Rice et al. 1996). It was during this time that the 1856 U.S. General Land Office (GLO) survey documented several historic trails within the region, as well as the Tipai settlement at San Sebastian Marsh (von Till Warren and Roske 1981; Warren et al. 1981).

3.2.3.3 Imperial Valley

Significant economic development of Imperial Valley and the Colorado Desert region began in the 1870s and came to fruition in the early part of the twentieth century. Development was dependent largely on transportation and the availability of potable water. The first of these came in 1872, with the construction of the Southern Pacific Railroad from Los Angeles to present-day Indio, and eventually to Yuma. The early townsite of Indio, the midpoint between Los Angeles and Yuma, was created to provide living quarters for train crews and railroad workers. The first trains ran on May 29, 1876 (Pittman 1995:36). The Southern Pacific continued east, paralleling an 1857 road along the eastern side of the Salton Trough. Railroad stops were built at Walters (now called Mecca), Woodspur (Coachella), and Thermal, among others. The same large dunes that had hindered de Anza's expedition hindered construction of the railroad.

The Southern Pacific Railroad was finally forced to build along the eastern edge of what came to be known as the Imperial Sand Dunes. Railroad sidings in the area with names such as Glamis, Amos, and Ogilby developed into small company towns. The second Transcontinental Railroad was completed when the Southern Pacific and Atchison, Topeka, and Santa Fe Railroads were linked at Deming in New Mexico Territory on March 8, 1881, providing settlers relatively quick and easy access to the region. The citizens of Imperial Valley petitioned the Southern Pacific Company to build a branch line south, connecting the valley to the main Southern Pacific Railroad. In 1903, the line was completed from Old Beach (Niland) to Imperial. By 1904, the line had been extended to Calexico (Heath 1945). A branch line ran from El Centro to Seeley, connecting the Southern Pacific to the San Diego and Arizona Eastern Railroad (Farr 1918). The San Diego and Arizona Eastern Railroad ran from 1919 to 1983, connecting San Diego and Imperial Counties (Crawford 2010).

The completion of the railroad resulted in an unprecedented real estate boom for the city and county of San Diego. The population of San Diego swelled by 700 percent from 5,000 in 1885 to 40,000 in 1889 (Hector et al. 2004:18). Most of the growth was concentrated in the coastal areas and adjacent inland valleys, west of the present Project area, but Imperial County began to experience significant development during the first decade of the twentieth century, with the inauguration of an irrigation system tapping the waters of the Colorado River.

The Alamo Canal, completed in 1901 by the California Development Company, was the first canal to serve Imperial County. By 1905, Imperial County had 80 miles of canals and 700 miles of distribution canals. Most of the water was redirected from Colorado River, providing water to 12 water districts that served Imperial Valley. During 1905 and 1906, a series of flash flood events on the Colorado River caused repeated breaches in the manmade levee system. As a result, the river changed course and most of its discharge flowed north until the levee system was finally repaired in early 1907. The result of these flood events was the formation of California's largest freshwater lake, the Salton Sea. Left on its own, the water in the Salton Sea would have eventually evaporated, but in 1928, Congress acted to designate the area as storage for wastes and seepage water from irrigated lands in Imperial Valley. Since then, the sea has been used mainly as a repository for agricultural wastewaters (Ponce 2005).

Prior to 1936, the water supply for the Imperial Valley was silt laden. The canal system quickly became clogged, and dredging the system was difficult and expensive. The California Development Company did not have the financial resources to keep the system clear; as described above, construction of a new control gate in 1905, coinciding with unusually heavy floods, led the Colorado River to overflow its banks and flood the Imperial Valley.

A total of 13,000 acres of irrigable land was destroyed as a result, with an additional 30,000 acres left without a water supply. All crops were lost and by 1909, the California Development Company was bankrupted.

The Imperial Irrigation District (IID) was formed in 1911 under a state charter to acquire properties of the bankrupt California Development Company. By 1922, the IID had acquired 13 water companies, and between 1930 and 1940, the All-American Canal (AAC) was built to replace the Alamo Canal (Dowd 1956:88). The AAC provided reliable water to the valley from the Colorado River and by 1942, became the sole source of imported water for the Imperial Valley. Today, approximately 1,667 miles (2,682 kilometers) of canals and laterals distribute irrigation water within IID's service area (U.S. Bureau of Reclamation n.d.).

In summary, between 1846 and 1900, the Imperial Valley transitioned from a remote and largely uncharted desert region to an area poised for agricultural development. This period was marked by exploration, early settlement attempts, and the foundational work of visionaries like Charles Rockwood, whose irrigation plans would eventually transform the valley into a fertile agricultural hub.

3.2.3.4 City of El Centro

El Centro was incorporated in 1908, just two years after W.F. Holt and C.A. Barker purchased the land El Centro was eventually built on in 1906. El Centro experienced rapid population growth within the first 12 years of existence. The Imperial County seat was given to El Centro, a primary driving force in the city's rapid population growth. From the get-go, the city was a fusion of different ethnicities including Indigenous Peoples, Indians, Japanese, and Swiss, who were drawn to the area with prospects in the agriculture and dairy industry (Howe 1918). By the 1940's, El Centro was the second largest city in the Imperial Valley and the wholesale center of the area. Nestled amongst Highway 80 and Highway 99 and being near railroad lines allowed the city to become a shipping center for vegetables in the southern end of the Valley. Agriculture was El Centro's biggest industry until the early 1980's. While agriculture is still a major industry, Government and Wholesale/Retail Trade were noted to be the largest employment sectors, establishing El Centro as not only an agricultural hub but also a regional commercial center (City of El Centro n.d.)



Figure 3-4: Main Street in El Centro, ca. 1910 (<https://calisphere.org/item/720fe2a5a99095fd28ca0bd005399af5/>)



Figure 3-5: Main Street El Centro, ca. 1937 (<https://content.ci.pomona.ca.us/digital/collection/Frasher/id/1194/rec/9>)

SECTION 4 Background Literature Review

4.1 Records Searches

On October 4, 2023, Chronicle Heritage, conducted an in-person records search at the South Coastal Information Center (SCIC) housed at San Diego State University. The 2023 and 2024 inventory effort included the Project along with a corresponding one-mile buffer, collectively termed the records search area. The objective of the SCIC records search was to identify previous studies and precontact and historical cultural resources within the records search area (Appendix D) (Clark and Torres 2024). A summary of the SCIC research is provided in Appendix A (Confidential).

On May 14, 2025, Catalyst requested a cultural resources records search for the proposed Project at the SCIC located at San Diego State University. This inventory effort included the Project area along with a corresponding half-mile buffer. As part of the cultural resources inventory, Catalyst staff built upon Chronicle Heritage's initial archival research to characterize the developmental history of the Project area and Native American outreach to obtain information on Native American cultural resources within the immediate vicinity of the Project area.

A summary of the results of the record search and background research is provided below.

4.2 Previous Cultural Resource Investigations

During the 2023 records search, a total of 37 previous cultural resource investigations have been conducted within a one-mile of the Project area. Fifteen of these studies encompassed portions of the Project area. Many of the prior studies were associated with proposed geothermal developments. The most recent of these studies was conducted in 2023 by PaleoWest (Clark and Severen 2023) and by Chronicle Heritage in 2024 (Clark and Torres 2024).

During the 2025 records search, a total of 22 previous cultural resources investigations has been conducted within half a mile with a total of nine of these studies encompassing portions of the Project area. All previous cultural resource investigations were captured in the 2023 records search and are associated with proposed geothermal developments, including the 2023 PaleoWest cultural resources study (Clark and Severen 2023). However, the 2024 Chronicle Heritage report (Clark and Torres 2024) was not captured in the search records and has been included in the list of previous cultural resource investigations . A description of these studies is provided below.

Table 4-1. Previous Cultural Resource Investigations

Report Number	Author	Year	Title
IM-00063	VON WERLHOF, JAY and SHRILEE VON WERLHOF	1976	ARCHAEOLOGICAL EXAMINATION OF A PROPOSED GEOTHERMAL TESTING SITE NEAR HEBER, CALIFORNIA
IM-00066	VON WERLHOF, JAY and SHERILEE VON WERLHOF	1976	ARCHAEOLOGICAL RECORD SEARCH OF THE HEBER, CALIFORNIA, REGION
IM-00115	VON WERLHOF, JAY and SHERILEE VON WERLHOF	1977	ARCHAEOLOGICAL EXAMINATION OF THE HEBER ANOMOLY REPORT PREPARED FOR VTN CONSOLIDATED, INC.
IM-00123	VTN CONSOLIDATED, INC.	1977	DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE HEBER GEOTHERMAL DEMONSTRATION PROJECT
IM-00185	VON WERLHOF, JAY and GEORGE E. COLLINS	1979	ARCHAEOLOGICAL EXAMINATIONS OF PROPOSED GEOTHERMAL FACILITIES NEAR HEBER, CA
IM-00192	VTN CONSOLIDATED, INC.	1979	DRAFT MASTER ENVIRONMENTAL IMPACT REPORT FOR A 500-MEGAWATT GEOTHERMAL DEVELOPMENT AT HEBER, IMPERIAL COUNTY, CALIFORNIA
IM-00199	WALKER, CAROL, CHARLES BULL, and JAY VON WERLHOF	1979	CULTURAL RESOURCE STUDY OF A PROPOSED ELECTRIC TRANSMISSION LINE FROM JADE TO THE SAND HILLS, IMPERIAL COUNTY, CALIFORNIA
IM-00233	WALKER, CAROL, CHARLES BULL, and JAY VON WERLHOF	1981	CULTURAL RESOURCE STUDY OF A PROPOSED ELECTRIC TRANSMISSION LINE FROM JADE TO THE SAND HILLS, IMPERIAL COUNTY, CALIFORNIA
IM-00235	BUREAU OF LAND MANAGEMENT	1981	APS/SDG&E INTERCONNECTION PROJECT - SUPPLEMENT TO THE DRAFT ENVIRONMENTAL DOCUMENT
IM-00301	WELCH, PATRICK	1983	CULTURAL RESOURCE INVENTORY FOR THIRTY PROPOSED ASSET MANAGEMENT PARCELS IN IMPERIAL COUNTY, CALIFORNIA
IM-00368	IMPERIAL COUNTY PLANNING DEPARTMENT	1987	CHEVRON GEOTHERMAL COMPANY OF CALIFORNIA SUPPLEMENTAL PROJECT INFORMATION FOR THE AUXILIARY PRODUCTION FACILITY HEBER GEOTHERMAL UNIT, IMPERIAL COUNTY
IM-00441	ENSR CONSULTING AND ENGINEERING	1990	ENVIRONMENTAL ASSESSMENT/INITIAL STUDY FOR THE PLACEMENT OF FIBER OPTIC FACILITIES BETWEEN SALTON MICROWAVE STATION AND CALEXICO CALIFORNIA
IM-00536	BURKENROAD, DAVID	1979	PHASE ONE REGIONAL STUDIES APS/SDG&E INTERCONNECTION PROJECT TRANSMISSION SYSTEM ENVIRONMENTAL STUDY CULTURAL RESOURCES: HISTORY

Report Number	Author	Year	Title
IM-00537	WIRTH ASSOCIATES, INC.	1979	PHASE ONE REGIONAL STUDIES APS/SDG&E INTERCONNECTION PROJECT TRANSMISSION SYSTEM ENVIRONMENTAL STUDY CULTURAL RESOURCES: ARCHAEOLOGY
IM-00538	IMPERIAL COUNTY	1979	PROPOSED WORKSCOPE PHASE II CULTURAL RESOURCES STUDIES APS-SDG&E TRANSMISSION INTERCONNECT PROJECT, MIGUEL TO SAND HILLS, SAND HILLS TO PVNGS
IM-00547	CULTURAL SYSTEMS RESEARCH, INC.	1982	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 500KV TRANSMISSION LINE
IM-00595	CSRI	1982	MOUNTAIN SPRINGS (JADE) TO SAND HILLS DATA RECOVERY PRELIMINARY REPORT
IM-01080	VON WERLHOF, JAY	1999	ARCHAEOLOGICAL EXAMINATIONS OF THE HEBER FACILITIES SEWER AND WATER IMPROVEMENTS PROJECT
IM-01306	WIRTH ASSOCIATES, INC	1980	APS/SDG&E INTERCONNECTION PROJECT ENVIRONMENTAL STUDY PHASE II CORRIDOR STUDIES - NATIVE AMERICAN CULTURAL RESOURCES APPENDICES
IM-01313	WIRTH ASSOCIATES, INC	1980	APS/SDG&E INTERCONNECTION PROJECT (PHASE II CORRIDOR STUDIES) - CULTURAL RESOURCES: ARCHAEOLOGY
IM-01727	ROBERTS, TED and LAUREN DEOLIVEIRA	2019	PHASE I CULTURAL RESOURCES REPORT FOR THE HEBER 1 EXPANSION PROJECT, IMPERIAL COUNTY, CALIFORNIA
N/A	CLARK, TIFFANY and GENA SEVEREN	2023	CULTURAL RESOURCES ASSESSMENT FOR THE DOGWOOD GEOTHERMAL ENERGY PROJECT, DOGWOOD SOLAR, AND HEBER 2 SOLAR FACILITIES, IMPERIAL COUNTY, CALIFORNIA
N/A	CLARK, TIFFANY and SCOTT TORRES	2024	CULTURAL RESOURCES ASSESSMENT FOR THE ORMAT 1 SOLAR PROJECT, IMPERIAL COUNTY, CALIFORNIA

4.2.1 Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Parasitic Facilities (Clark and Severen 2023)

In February 2023, PaleoWest conducted a cultural resource assessment for the Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Parasitic Facilities (Clark and Severen 2023). The pedestrian survey identified three historic built-environment resources: the Central Main Canal, Dogwood Canal, Beech Canal and Drain. All three resources represent irrigation infrastructure associated with the All-American Canal system. PaleoWest conducted a comprehensive evaluation of these cultural resources for California Register of Historical Resources (CRHR) eligibility under all four criteria. Based on this analysis, the Central Main Canal was determined eligible for CRHR listing, while both the Dogwood Canal and Beech Canal and Drain were determined not eligible due to compromised integrity.

The 2023 PaleoWest survey encompassed approximately 28 acres within the proposed solar field area for the current Project. The study also included survey coverage of approximately 1-mile of the Project's 2.3-mile interconnection line alignment (known as Route 3 for the 2025 survey).

4.2.1 Cultural Resources Assessment for the Ormat Heber 1 Solar Project, Imperial County, California (Clark and Torres 2024)

Chronicle Heritage conducted a pedestrian cultural resource survey of the proposed Project area between October 25 and 27, 2023 with a supplemental survey on January 17, 2024. The surveys encompassed 127 acres of the proposed 155-acre solar field and a 1.3-mile-long portion of the 2.3-mile-long interconnection line alignment; the surveys of the interconnection line included a 300-foot (91-meter) buffer. The remaining portions of the solar field (28 acres) and interconnection line alignment (37 acres) were not included in this field work effort as these areas had been recently surveyed by PaleoWest in February 2023 as part of the Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Parasitic Facilities projects. The four previously recorded historic built-environment resources were relocated with an additional segment of the Dogwood Canal identified in the Project area. A historic residence at 602 Dogwood Road and two additional irrigation features (Daffodil Canal and Date Drain No. 3) were also documented during the field survey. Chronicle Heritage analyzed the CRHR eligibility of the three newly identified cultural resources under Criteria 1, 2, 3, and 4. None of the resources are recommended eligible for listing in the CRHR.

The findings of the study indicate that only two resources, the Central Main Canal and the Niland to Calexico Railroad (P-13-008682), were recommended eligible or are unevaluated for listing in the CRHR, respectively. An impact analysis concluded that both historic-era resources will be avoided by the proposed Project. The remaining five cultural resources (Dogwood Canal, Beech Canal and Drain, 602 Dogwood Road, Daffodil Canal, and Date Drain No. 3) within the Project are not eligible for listing in the CRHR. Based on these findings, Chronicle Heritage recommends a finding of no impact to historical or archaeological resources under CEQA.

4.3 Previously Recorded Cultural Resources

Record search data analysis from the Chronicle Heritage search reveals that 10 cultural resources have been previously documented within a one-mile radius of the Project area (Clark and Torres 2024) (Table 4-2) with a total of seven overlapping with the Project area.

The May 2025 record search requested by Catalyst to the SCIC revealed one resource had been previously documented, the Niland to Calexico Railroad (P-13-008682/CA-IMP-8166H).

The records search indicated that resources in this area are predominately from the historic period and comprise telegraph pole locations, a mesquite grove, a railroad segment, multiple canal and irrigation infrastructure, and a pool facility. Four of these documented resources intersect with the proposed Project area. Detailed descriptions of each intersecting resource from the Chronicle Heritage record search are provided below.

Table 4-2. Previously Recorded Cultural Resources

Primary Number	Trinomial	Resource Type	Description
P-13-003309		Unknown	Mesquite Grove
P-13-003312	CA-IMP-3312H	Unknown	Photo Update of the U.S. Military Telegraph Line Mapped on 1880 US GLO Survey Map
P-13-003313	CA-IMP-3313H	Unknown	Photo Update of the U.S. Military Telegraph Line Mapped on 1880 US GLO Survey Map
P-13-007130	P-13-07130	Structure	All American Canal
P-13-008682	CA-IMP-8166H	Structure	Niland to Calexico Railroad
P-13-009077		Structure	Cole Road Pool
P-13-012743		Structure	Irrigation Drop Feature for the Stout Drain No. 2
P-13-012243		Structure	Central Main Canal
P-13-008987		Structure	Dogwood Canal
N/A		Structure	Beech Canal and Drain
N/A		Structure	602 Dogwood Road
N/A		Structure	Daffodil Drain and Lateral 1
N/A		Structure	Date Drain No.3

4.3.1 Niland to Calexico Railroad (P-13-008682/CA-IMP-8166H)

The Imperial Valley Desert Museum initially recorded the Niland to Calexico Railroad (P-13-008682/CA-IMP-8166H) in 2003 (Collins and Pfaum 2003). The resource consists of an approximately 40-mile long rail line that branches from the Southern Pacific Railway at Niland and extends in a roughly southerly direction to the town of Calexico. The railroad is composed of a standard gauge track with a gravel base. Built between 1903 and 1904, the railroad serves to connect the main Southern Pacific line with cities in Imperial County. The line remains in use to transport resources from Mexico and Imperial County to the rest of the United States. At the time of the recording, it was not known whether the resources had been previously evaluated for listing in the CRHR.

4.3.2 Central Main Canal (P-13-012243)

The Central Main Canal is a major distribution canal that channels water throughout Imperial County. The linear feature branches from the All-American Canal, located northeast of Calexico. The canal runs roughly northwest for approximately 27 miles (43.5 kilometers) and drains into the New River. An approximately 3-mile (4.8 kilometer) long segment of the canal was recorded in PaleoWest's 2023 study (Clark and Severen 2023). The Central Main Canal in this area ranges from approximately 80 to 100 feet in width and is contained within sloped earthen banks that are flanked by a mixture of dirt and paved access roads. Dense, low vegetation lines the areas of the banks nearest to the flowing water.

The exact date of the canal construction is not known; however, historical maps indicate that the canal was in operation by the early 1900s (USGS 1907). An evaluation of significance identified that the Central Main Canal is eligible under CRHR Criterion 1 due to its association with historical events that have significantly contributed to the broad patterns of California's history (Clark and Severen 2023).

4.3.3 Dogwood Canal (P-13-008987)

PaleoWest originally recorded an approximately 3.5-mile-long (4.8 kilometer) segment of the Dogwood Canal in 2023 (Clark and Severen 2023). The Dogwood Canal branches off the Central Main Canal and runs west paralleling the Central Main Canal for approximately 2.5 miles (4 kilometers) before turning north and continuing along Dogwood Road for approximately 10.3 miles (16.5 kilometers). Several smaller laterals diverge off the Dogwood Canal along its route.

The recorded canal segment consists of an open channel with earthen banks. The portions of the alignment have been lined with concrete and numerous check/drop structures have been built along its linear feature. Historical maps indicate that the canal is operational by the mid 1910's (USGS 1915). An evaluation of significance concludes that the Dogwood Canal meets Criterion 1 for listing in the CRHR (Clark and Severen 2023). However, the resource lacks integrity of setting, feeling, association, workmanship, and materials. Due to the loss of integrity, the character-defining aspects of the Dogwood Canal do not retain sufficient integrity to convey its significance under Criterion 1 and the resource is not eligible for listing in the CRHR.

4.3.4 Beech Canal and Drain

The Beech Canal is a 6.5-mile-long linear irrigation structure that originates from the Central Main Canal in Calexico and drains to the north into the New River. PaleoWest recorded a segment of the canal and its associated drainage system in 2023 (Clark and Severen 2023). Multiple smaller lateral channels branch off both the north and south sides of the Beech Canal throughout its length.

The Beech Canal features an open, concrete-lined, trapezoidal design, with lateral channels that are similarly concrete-lined. Contractor date stamps indicate that at least portions of the structures receive concrete lining in 2012. The lateral channels include numerous check and drop structures consisting of single gates with chutes and cement walls operated by jack-type lifting mechanisms mounted on metal or wooden cross beams. Historic topographic maps show that the Beech Canal and its laterals are constructed between 1907 and 1915.

The Beech Canal irrigation system also incorporates a network of dirt-lined drainage ditches designed to remove excess water from irrigated fields. The primary component, known as the Beech Drain, runs westward along the southern edge of the Central Main Canal for approximately 1.5 miles before emptying into the New River. The drainage system appears to be built after the original canal construction, likely by the Imperial Irrigation District (IID) during the late 1920s or 1930s.

PaleoWest's significance evaluation concluded that the Beech Canal and Drain meets Criterion 1 for listing on the California Register of Historical Resources (CRHR) (Clark and Severen 2023). However, the resource lacks integrity in setting, feeling, association, workmanship, and materials. Due to this loss of integrity, the character-defining features of the Beech Canal and Drain do not retain sufficient integrity to convey their historical significance under Criterion 1, rendering the resource not eligible for CRHR listing.

4.3.5 Daffodil Drain and Lateral 1

In October 2023, Chronicle Heritage recorded Daffodil Canal and Lateral 1 during the Cultural Resource Assessment for the Ormat Heber 1 Solar Project (Clark and Torres 2024). The Daffodil Canal branches off the Central Main Canal near the Pfizer Road and Jasper Road intersection and is part of the IID system. This linear resource runs north along the west side of Pfizer Road for approximately one mile. The canal consists of an open concrete-lined channel that has a top width ranging from approximately 18 to 20 feet (5.4 to 6 meters) with an unknown depth; a 440-foot-long (134 meter) portion of the canal east of Heber 1 Geothermal Energy Facilities is buried. At least two check/drop structures are present along its course, each of which consists of gates with chute and cement walls that operate with a jack-type lifting mechanism resting on a wooden cross beam. The condition of the gates and hardware associated with these features suggest they have been replaced at some point and are not original to the structure.

The Daffodil Lateral 1 extends off the Daffodil Canal just north of the Heber 1 Geothermal Energy Facilities. The lateral overall measures 0.5 miles in length and consists of an open concrete-lined channel with a top width of approximately 10 feet (3 meters) and an unknown depth. Although the date of construction of the canal and lateral is not known, historical maps indicate that it was operational by 1940.

4.3.6 Date Drain No. 3

In October 2023, Chronicle Heritage recorded Date Drain No. 3 during the Cultural Resource Assessment for the Ormat Heber 1 Solar Project (Clark and Torres 2024). The Date Canal is part of IID's canal system, which was initially built in the early twentieth century. The construction and operation of the Date Drain No. 3 and its associated lateral are an important event in the early settlement of the Imperial Valley. The canal significantly increased agricultural productivity between the New River and Alamo River.

The channel is an approximately 0.7-mile-long, L-shaped earth drainage ditch that includes a roughly 0.25-mile-long segment running in a north-south direction parallel to the eastern side of Dogwood Road. A 0.55-mile-long segment of the drainage runs west-east along the mid-section of Township 16 South, Range 14 East, Section 33. The drainage was constructed to remove excess water from irrigated fields and appears to be associated with the Date Canal. The upper width of the drainage is approximately 20 to 30 feet (6 to 9 meters) with a depth roughly 8 to 10 feet (2.4 to 3 meters). While the Date Canal appears on a 1915 topographic map; Date Drain No. 3 first appears on a 1957 topographic map (USGS 1915, 1957).

4.3.7 602 Dogwood Road

In November 2023, Chronicle Heritage recorded 602 Dogwood Road during the Cultural Resource Assessment for the Ormat Heber 1 Solar Project (Clark and Torres 2024). At the time of this recording, a historic-era residential and accessory building (utility shed) were documented at the southwest corner of the proposed parasitic solar field (Clark and Torres 2024). The documentation by Chronicle Heritage in recorded a primary building with a vernacular single-family residence that is clad in T-11 siding and featured a low-pitched, side-gabled roof sheathed in composition shingles. The noted wooden accessory building is located adjacent to the northeast corner of the residence and appears to have been utilized as a utility shed. The accessory building was noted as dilapidated and included an open doorway and flat roof. The building is clad in a combination of an oriented strand board and plywood sheeting. The boundary of 602 Dogwood Road is limited to the legal parcel boundary and was observed to be in fair condition.

During the 2024 evaluation by Chronicle Heritage, the property at 602 Dogwood Road did not appear to be a significant building in the Heber area or Imperial County. As a result, the resource was recommended not eligible for listing under all four Criteria in the CRHR (Clark and Torres 2024).

4.4 Historic Maps and Aerial Photographs

Background research incorporated historical maps spanning from 1856 to 2012, including BLM General Lands Office survey plats and USGS topographic quadrangles at various scales. Additionally, aerial photographs from 1953 through 2020 were analyzed to document landscape changes over time (NETROnline 2023). This included historical maps from the BLM's General Lands Office (GLO) survey plat maps (1856 and 1880) and the Holtville, CA (1907) and El Centro, CA (1915, 1942, 1954, 1955, 1958, 1961, 1964, and 1989) 30-minute, Heber, CA (1940, 1943, and 1957a) 15-minute, and Heber, CA (1957b and 2012) 7.5-minute USGS topographic quadrangles

The earliest documented infrastructure within the vicinity appears on the 1907 Holtville topographic map, which depicts the Central Main Canal east of the Project area (USGS 1907). By 1915, significant development had occurred within the Project boundaries, including the construction of the Central Main and Dogwood canals, establishment of a road network (Dogwood Road and Pfizer Road), and the Niland to Calexico Railroad traversing the eastern Project area (USGS 1915).

Development continued through the mid-20th century with a single building constructed in the southwest solar field area by the early 1940s (USGS 1940). By 1953, the entire Project area had been converted to agricultural use, with the Beech Canal and Drain infrastructure completed (NETROnline 2023). The 1984 aerial imagery documents construction of the Heber 1 Geothermal Energy Facility, which became operational in 1985 (NETROnline 2023; Southern California Public Power Authority 2023). Since the 1980s, land use within the Project area has remained relatively unchanging with no significant modifications documented (NETROnline 2023).

4.5 Native American Heritage Commission Sacred Lands File Search

On October 10, 2023, on behalf of Catalyst, Chronicle Heritage submitted a Sacred Lands File (SLF) search request for the Project area to the Native American Heritage Commission (NAHC). The NAHC responded on November 14, 2023, indicating that sacred lands listed in the SLF are present within the search area (Appendix D).

The NAHC also included a list of Native American representatives who may have an interest in the Project. Initial outreach to these representatives by Chronicle Heritage occurred in October 2023, on behalf of Catalyst (Clark and Torres 2024).

4.6 Tribal Outreach

Catalyst reviewed the previous correspondence by Chronicle Heritage from November 2023. Chronicle Heritage sent outreach letters to 24 individuals representing 16 local Native American tribal groups on November 7 and 8, 2023 to elicit information on Native American cultural resources that may be located in the vicinity of the proposed Project. Follow-up phone calls to individuals who had not yet responded were conducted on November 20, 2023. To date, six responses have been received. A summary of responses is provided below.

- On November 7, 2023, an email was received from Erica M. Pinto, Chairwoman for the Jamul Indian Village of California. Chairperson Pinto stated that the Jamul Indian Village defers to tribes closer to the Project.
- On November 14, 2023, Bernice Paipa responded via email on behalf of Chairperson Martinez. Ms. Paipa stated that the Sycuan Cultural Resource Center has consulted their maps and determined the project described is not within the boundaries of the recognized Sycuan Indian Reservation. However, they have determined it is within the boundaries of the Kumeyaay Nation's traditional territory. Imperial County is the homeland to the Kumeyaay Nation and the Sycuan have ancestral ties to this area as well as a historical, cultural, spiritual and religious interest. The Sycuan requested a time to meet and discuss the cultural and archaeological reports and the impact this project will have on the area. In addition, Ms. Paipa requested that Kumeyaay Monitors also be requested during any ground disturbance and surveys.
- Daniel Tsosie, Cultural Resource Manager for the Campo Band of Mission Indians, emailed on November 16, 2023 and stated that the Campo Band had concerns regarding the Project. The Project area is within or adjacent to Kumeyaay travel/migration/ and trade routes. Mr. Tsosie requested a Native American Monitor be present during public surveys, soils testing, and during ground disturbance. He also requested that Campo Band is included be included in the treatment and monitoring plan.
- Chronicle Heritage staff discussed the Project on a phone call with Manfred Scott, Acting Chairman of the Kww'ts'an Cultural Committee, on November 20, 2023. Chairperson Soctt stated he was planning on visiting the Project area but had been unable to make it out yet. He intends to conduct the site visit soon and will reach out to Chronicle Heritage if he has any comments or questions.
- Ray Teran of the Viejas (Baron Long) Group of Capitan Grande of Mission Indians of the Viejas Reservation responded via email on November 20, 2023, and stated that he had reviewed the letter and determined that the Project site has cultural significance or ties to Viejas. Mr. Teran noted that resources have been located within or adjacent to the proposed Project area. He requested that a Kumeyaay Cultural Monitor be on site for ground disturbing activities and asked to be informed of any new developments such as inadvertent discovery of cultural artifacts, cremation sites, or human remains.
- Ernest Pingleton, Tribal Historic Officer for the Viejas Band of Kumeyaay Indians, returned call on November 20, 2023 and requested that a Kumeyaay monitor be present during ground disturbance activities for the Project.

SECTION 5 Investigation Methods

5.1 Field Methods

The following section describes the methods for identifying cultural resources in the Project area during the survey effort. The background research described in Section 4 heavily influences the research design described below. While it is always possible to encounter cultural material where it is not expected, the background research provides a framework for what to anticipate in the Project area.

The purpose of this field investigation is to determine the presence or absence of cultural resources within the Project area. If such resources are present, to determine the boundaries of the resources, and potential effects, which could be caused by the proposed Project. Upon the identification of any resources in the Project area, archaeologists may work with project personnel to determine if design modifications can be made to avoid impacts to resources.

5.1.1 Site and Isolated Occurrence Definitions

The OHP's *Instructions for Recording Historical Resources* (OHP 1995) notes that a site is the location of a prehistoric or historic-era occupation or activity. For the purposes of this study, a "site" was defined as a location that has material evidence of past life, activities, and culture that is at least 50 years of age. In general, an archaeological site should exhibit at least one of the following:

- One or more features;
- Three or more artifacts in clear association within a 25 m² (5 × 5 m) area;
- Fewer than three artifacts that have data potential or are "diagnostic" (e.g. fluted points)

Resources separated by more than 30 meters or located on different landforms will be recorded as distinct sites or as isolates, unless other indicators suggested a close association. Resources will be recorded as isolates if they are composed of two or fewer artifacts, including collections of artifacts that can be retrofit into two or fewer artifacts.

5.1.2 Documentation Methods

When cultural resources are identified during the survey activities, qualified archaeologists documented each property according to the Secretary of the Interior's Standards for Archaeological Documentation. Previously unrecorded sites would be assigned to temporary field designations, while previously documented properties are referenced by their established Primary Number identifiers.

All cultural materials and features of an eligible age were recorded during the survey in accordance with OHP (1995) guidelines. Historic period archaeological indicators include the remnants of buildings, objects, and structures, or concentrations of materials at least 45 years in age, such as domestic refuse (e.g., glass bottles, ceramics, toys, buttons, and leather shoes), refuse from other pursuits such as agriculture (e.g., metal tanks, farm machinery parts, and horse shoes) or structural materials (e.g., nails, glass window panes, corrugated metal, wood posts or planks, metal pipes and fittings, and railroad spurs). Precontact site indicators include areas of darker soil with concentrations of ash, charcoal, animal bone (burned or unburned), shell, flaked

stone, ground-stone, pottery, or even human bone. Historic built-environment resources included standing buildings or structures that were constructed at least 45 years ago.

Personnel mapped all identified properties on USGS topographic base maps and recorded the UTM coordinates using GPS equipment with sub-meter accuracy capabilities. Post-fieldwork investigations may include archival research, historical documentation review, and oral history collection to better understand the identified cultural resources.

5.2 Pedestrian Survey Methods

The goal of the field inventory was to document the presence and/or absence of cultural materials within the proposed Project area. Catalyst archaeologists conducted an intensive pedestrian survey consisting of transects spaced at intervals no greater than 30 meters (98.5 feet) throughout the Project area, with occasional meandering transects.

In addition to surveying the ground surface, archaeologists paid special attention to areas with visibility to subsurface mineral deposits, including accessible stream/canal bank profiles, unusual contours, soil changes, distinctive vegetation patterns, features (e.g. road cuts, ditches, and stream cuts) rodent mounds, etc. All site and survey locations (point, line or polygon) were recorded using Global Positioning System (GPS) technology and submitted as Global Information System (GIS) files. In instances where surveys cannot be recorded by GPS.

Artifacts identified on the surface were analyzed in the field but not collected. To the extent possible, they were identified as to type, material, function, and cultural and chronological association.

5.2.1 Historic Built Environment Field Survey

A historic built-environment survey was conducted as part of the cultural resources survey to identify the extent and condition of standing buildings, structures, and/or objects within the Project area that are more than 50 years old. In accordance with OHP's Instructions for Recording Historical Resources (OHP 1995), a district is defined as possessing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. The term "structure" is used to distinguish from buildings or those functional constructions usually made for purposes other than creating human shelter.

Newly identified built-environment resources will be examined to determine the constituents and boundaries. Historic maps and aerial images will also be reviewed to determine the boundaries of any standing buildings, structures, or clusters. If surface or potential subsurface deposits of historic-period archaeological material, or features, are noted as being associated, these will be recorded as part of the built-environment resource. These resources will be documented on the appropriate DPR forms for built environment resource types. Documentation will also include photographic recordation, as well as descriptive field observations and GPS coordinates. Previously recorded built environment resources will also be revisited during the architectural survey. The current condition of these resources will be assessed, and an update will be made to the DPR forms, if determined necessary.

5.3 Subsurface Testing

Shovel test probes were not conducted by Catalyst during the survey for the proposed Heber 1 Parasitic Solar Project. In the Project area, ground visibility ranged between 20 to 80%. A majority of the proposed project is taking place in a previously active agricultural fields that have been ploughed for over a decade.

Also, much of the Project area comprising of the proposed interconnecting alignments and terminating at the Heber 1 Geothermal Energy Facility were observed to be highly developed areas with ground surfaces displaying extensive disturbance. Based on these observations, no shovel test probes were conducted for the purposes of the survey.

5.4 Cremations and Human Remains

Traditionally, the Late Precontact and Protohistoric peoples of the Salton Trough area practiced cremation, although other practices, including burial, are known archaeologically. In situ burials and cremations in this area of Colorado Desert are frequently associated with small collections of artifacts, including ceramics, lithic artifacts, basketry, faunal and botanical materials, and shell ornaments and beads. Very often, cremations and burials were placed in depressions or holes specifically dug for the purpose of interring the dead. For that reason, burials and cremations may be minimally evident or completely imperceptible on the present-day ground surface.

If human remains or fragmentary bones that are suspected to be human are encountered during survey activities, all work at that location will be suspended. The Project crews will notify the appropriate contacts at ORMAT and Catalyst along with the on-site Native American Tribal Participant (NATP) (if not present at the discovery location) immediately. Any human remains encountered in the Project area will be treated in compliance with the California Health and Safety Code Section 7050.5 and Public Resources Code (PRC) Section 5097.98. With respect to the latter, the California Native American Heritage Commission (NAHC) will identify the Most Likely Descendant for purposes of compliance with PRC 5097.98

5.5 Site Safety

Fieldwork is a key part of this the cultural resources review efforts, ensuring the safety of all team members is a top priority. Catalyst is committed to a strong culture of safety and maintains a comprehensive Health and Safety Program that addresses potential risks and appropriate mitigation measures. For this project, Catalyst developed a site-specific Health, Safety, and Environmental (HSE) Plan outlining safety protocols and requirements to protect field personnel during the survey.

The purpose of the HSE Plan is to identify, evaluate, and control potential safety hazards, to protect the environment, and to provide risk mitigation measures to be followed during field activities at the survey site. The provisions set forth in the HSE Plan apply to the employees of Catalyst and their subcontractors working on project tasks that expose workers to hazards in the field. Subcontractors may elect to modify these provisions, but only to upgrade or increase the safety activities.

The HSE Plan addresses the expected potential hazards that may be encountered for this project. If unanticipated changes in site or working conditions occur that are not addressed by this HSE Plan, addenda are provided as necessary by Catalyst.

A copy of this HSE Plan is taken to the job site; a copy of the HSE Plan and completed tailgate meeting records are placed in a project file and made available upon request.

SECTION 6 Results

On May 20, 2025, Catalyst Cultural Resources Practice Lead, Katherine Tipton and Staff Scientist, Tim Lee, conducted a cultural resources survey of the proposed Project area, which included an intensive pedestrian survey.

Overall, the Project area, which included the solar field and transmission line routes (1-3), were systematically surveyed using transects spaced at 30 meters (98.4 feet) or less. At the time of the survey, weather conditions were characterized by clear, sunny skies, and very warm temperatures throughout the survey. Surface visibility across the Project area was generally good, ranging from 20 to 80%. Visibility was highest across a previously active agricultural field. Much of the Project area is within an agricultural field and parallels developed roads. Visibility was relatively low for portions of the interconnection alignments that ran along Dogwood Road, Willoughby Road, Ware Road, and Jasper Road.

The Project area has undergone extensive agricultural and geothermal development, resulting in minimal natural vegetation and comprehensive ground surface disturbance. All surveyed areas show evidence of prior impact from multiple sources: agricultural operations, canal and drainage ditch construction, transmission line and roadway installation, and geothermal facility development and maintenance activities.

The survey areas are broken up by proposed activity, which includes the parasitic solar field and three proposed interconnection line routes (noted as Route 1, 2, and 3). Each area was pedestrian surveyed, and area described in more detail below.

The survey of the Project area resulted in the relocation of segments of seven previously documented historic built-environment resources including the Niland to Calexico Railroad (P-13- 008682), the Central Main Canal, the Dogwood Canal, the Beech Canal and Drain system, a historic residence at 602 Dogwood Road and two additional irrigation-related features (Daffodil Canal and Date Drain No. 3).

Figure 6-1 shows the location of all the resources identified in the Project area. Descriptions and evaluations of the documented resources are provided in further detail in Section 7; Department of Parks and Recreation (DPR) 523 forms and updates are provided in Appendix C.

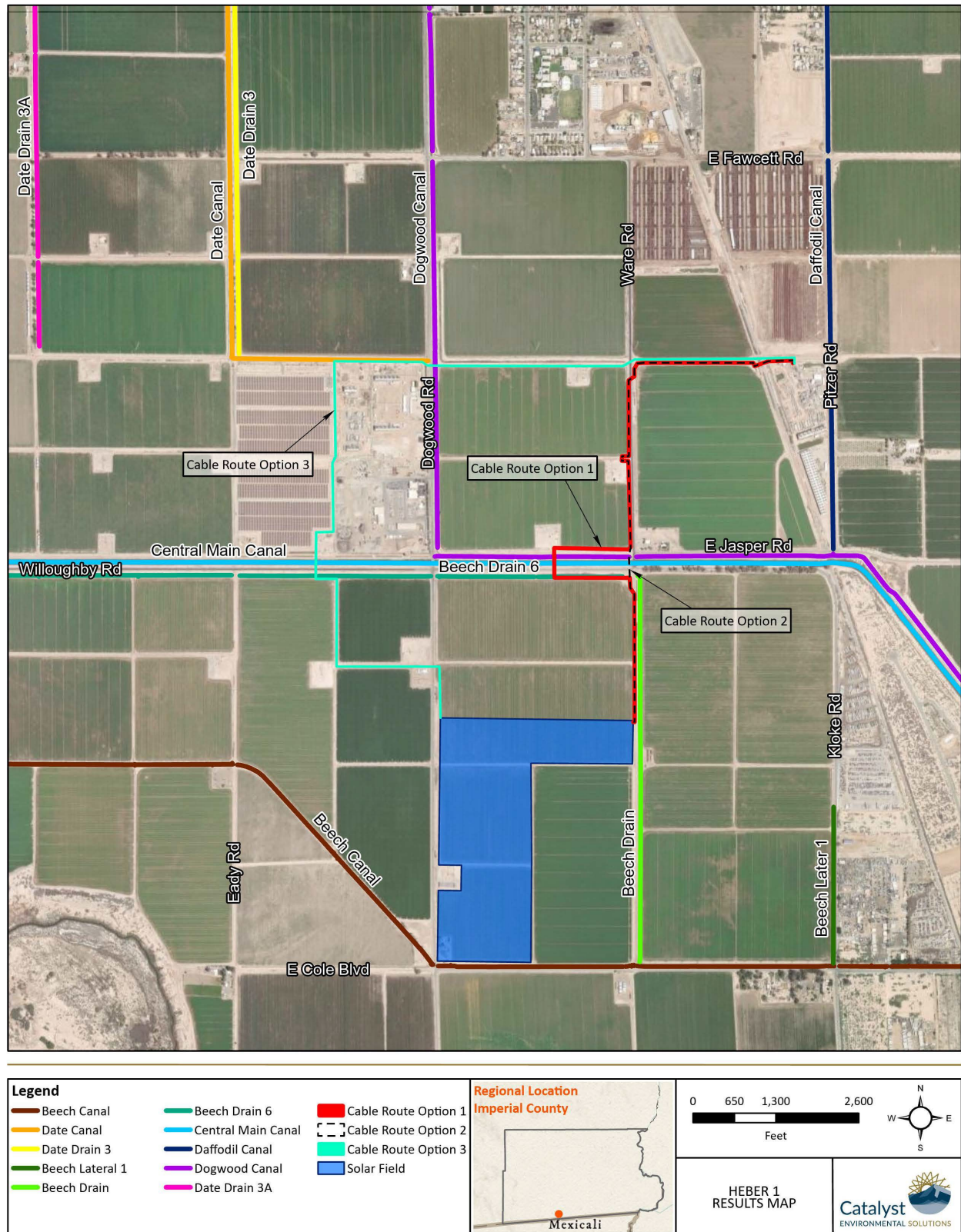


Figure 6-1. Cultural Resources Survey Results Map for the Heber 1 Parasitic Solar Project.

6.1 Parasitic Solar Field

A total of three agricultural fields comprise the proposed areas for the parasitic solar field. Fields 1 and 2 were pedestrian surveyed utilizing north to south transects, while Field 3 was surveyed with east to west transects. All fields in the proposed parasitic solar field area were systematically surveyed using transects spaced at 30 meters (98.4 feet). W. Cole Road bounds the proposed parasitic fields to the south, while Dogwood Road bounds all fields to the west (see Figures 6-2 through 6-7).

Ground visibility within the fields ranged from 70 to 80%. The area has undergone extensive agricultural development, resulting in minimal natural vegetation and comprehensive ground disturbance. Vegetation consisted of alfalfa, wild morning-glory, and various short native and non-native grasses. 602 Dogwood Road was revisited during the survey and is in the southwest corner of Field 1 for the parasitic solar field. This resource is further discussed in Section 7.



Figure 6-2. Overview of Field 1 at the northeastern corner of the survey area. View to the west.



Figure 6-3. Ground visibility in Field 2 for the Parasitic Solar Field. Plan view.



Figure 6-4. Overview of Field 3 for the Parasitic Solar Field. View to the northeast.

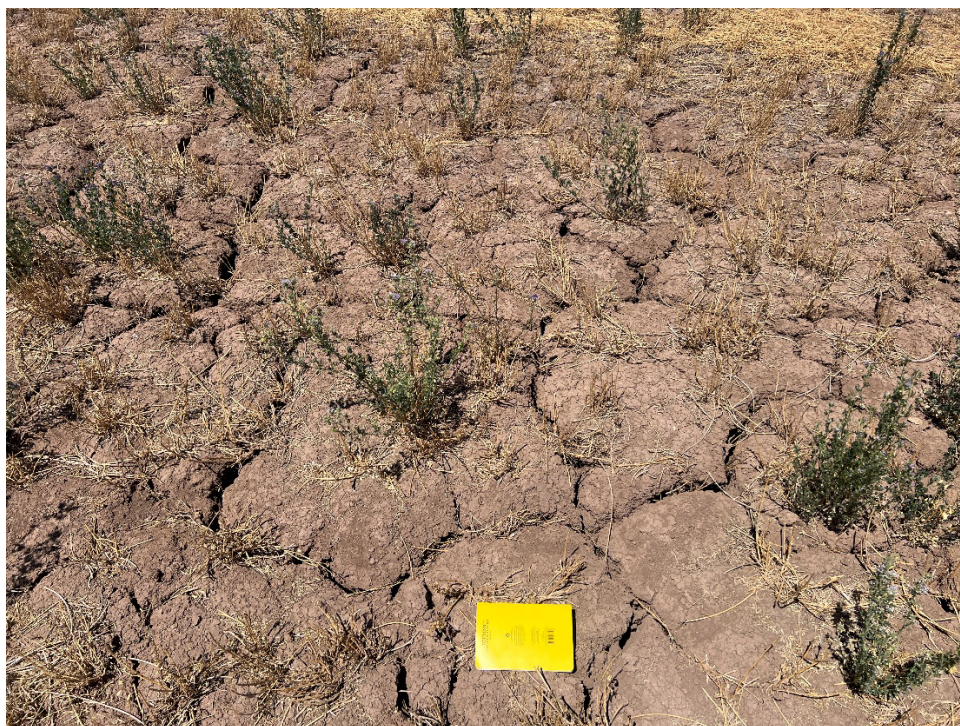


Figure 6-5. Ground visibility in Field 3 for the Parasitic Solar Field. Plan view.



Figure 6-6. Overview of Field 3 from Field 2 with unnamed lateral from Beech Drain in the foreground. View to the north.



Figure 6-7. Overview of Dogwood Road bounding all fields to the west. View from 602 Dogwood to the south.

6.2 Optional Route 1

As noted in Section 1.1, Optional Route 1 is a proposed medium voltage cable that would exit the northeast corner of the solar site (Field 3) and travel north along an existing raised berm. The cable would either be directionally buried or strung on monopoles to cross the Central Main Canal and Willoughby Road. The cable would continue along Ware Road for approximately a third of a mile where it would meet an existing pipeline alignment that runs to the Heber 1 Plant. All road, canal, and rail crossings would be overhead via 30 foot (9 meter) monopoles or would be directionally buried underground if feasible (see Figures 6-8 through 6-13).

The entirety of this Optional Route 1 was systematically pedestrian surveyed, beginning at the southern end of the route up to its crossing with the Central Main Canal where it links with proposed Optional Route 2. The area surrounding Optional Route 1 has been extensively developed for agriculture and geothermal operations, resulting in minimal natural vegetation and widespread ground disturbance. All surfaces within the exhibited evidence of previous disturbance from agricultural activities, canal and drainage ditch construction, transmission line and roadway installation, and geothermal facility development and maintenance. Optional Route 1 crosses Beech Canal and Drain and the Central Main Canal and parallels Daffodil Lateral 1 and Date Drain No. 3.



Figure 6-8. Overview of from southern extent of Optional Route 1 and 2 towards solar site (right) paralleling Ware Road and Beech Drain. View to the south.



Figure 6-9. Overview of Optional Route 1 crossing Central Main Canal. View to the west.



Figure 6-10. Overview from Route 1 from crossing at Central Main Canal with Beech Drain in the background. View to the south.



Figure 6-11. Overview from Route 1 towards Route 2, crossing the Central Main Canal. View to the west.



Figure 6-12. Overview of Route 1 and 2 paralleling Ware Road, where it joins Route 3. View to the south.



Figure 6-13. Overview of where Routes 1-3 head east to Heber 1. View from Ware Road to the east.

6.3 Optional Route 2

As noted in Section 1.1, this medium voltage cable would follow the same path as Optional Route 1, exiting the northeast corner of the solar site and travel north along an existing raised berm. Before Willoughby Road, the cable would turn west for approximately 0.15 miles and then the cable would either be directionally buried or strung on monopoles to cross Willoughby Road and the Central Main Canal to an existing geothermal well pad (see Figures 6-14 through 6-16). The cable would run east along an existing pipeline alignment and then turn north along the same pipeline alignment along Ware Road for approximately a third of a mile where it would meet an existing pipeline alignment that runs to the Heber 1 Plant. All road, canals, and rail crossings would be overhead via 30 foot (9 meter) monopoles or would be directionally buried underground, if feasible.

The entirety of Optional Route 2 was systematically pedestrian surveyed. Since Optional Route 2 overlaps with Route 1 in some areas, crews surveyed the 0.15-mile section that turns west off Optional Route 1 paralleling the Central Main Canal then crossing the canal, while completing the Route 1 survey. The area surrounding Optional Route 2 has been extensively developed for agriculture and geothermal operations, resulting in minimal natural vegetation and widespread ground disturbance. All surfaces within the exhibited evidence of previous disturbance from agricultural activities, canal and drainage ditch construction, transmission line and roadway installation, and geothermal facility development and maintenance. Optional Route 2 crosses Beech Canal and Drain and the Central Main Canal and parallels Daffodil Lateral 1 and Date Drain No. 3.



Figure 6-14. Overview from Route 2 crossing at Central Main Canal. View to the north.



Figure 6-15. Overview from Route 2 crossing at Central Main Canal. View to the northeast.



Figure 6-16. Overview from Route 2 towards Route 3 with Heber 2 (left) and Dogwood Lateral Two (right) with the Dogwood Canal in the foreground. View to the west.

6.4 Optional Route 3

As stated in Section 1.1, the medium voltage cable would cross Dogwood Road and be attached via trays to an existing pipeline that runs west before turning north to cross the Beech Drain and Main Canal at the existing above-ground pipeline crossing. The cable would continue to follow the existing pipeline alignment to the Heber Geothermal Energy Complex and travel along the northern boundary to exit the HGEC's northeast corner. The cable would not connect to any HGEC energy facilities, simply pass through the site. The cable would then cross back over Dogwood Road and continue down an existing pipeline alignment to the Heber 1 Plant. All road and rail crossings would be overhead via 30 foot (9 meter) monopoles or would be directionally buried underground if feasible (see Figures 6-17 through 6-23).

In 2023 and reported in 2024, Chronicle Heritage conducted a survey of the proposed Heber 1 Solar Project, which 1.3 miles of the 2.3-mile-long interconnection line (Appendix D) (Clark and Torres 2024). The entirety of the 2.3 miles of Optional Route 3 was resurveyed by Catalyst during the May 2025 pedestrian survey. The area surrounding Optional Route 3 has been extensively developed for agriculture and geothermal operations, resulting in minimal natural vegetation and widespread ground disturbance. All surfaces within the area exhibited evidence of previous disturbance from agricultural activities, canal and drainage ditch construction, transmission line and roadway installation, and geothermal facility development and maintenance. Optional Route 3 crosses the Beech Canal and Drain along with a crossing at Central Main Canal and the Dogwood Canal while paralleling Daffodil Lateral 1 and Date Drain No. 3 in the last half mile before terminating at Heber 1.



Figure 6-17. Overview of from the southern extent of Route 3 paralleling Dogwood Road. View to the north.



Figure 6-18. Overview of Route 3 that parallels Beech Canal and Drain at section before turning north. View to the east.



Figure 6-19. Overview from Route 3 crossing Beech Canal and Drain. View to the east.



Figure 6-20. Overview of Route 3 that from crossing at Central Main Canal. View to the south.



Figure 6-21. Overview of Route 3 crossing at Central Main Canal. View to the northwest.



Figure 6-22. Overview from terminus at Heber 1 for Routes 1-3, Date Drain 3 on the right. View to the west.



Figure 6-23. Overview of terminus at Heber 1 for Routes 1-3, crossing the Niland to Calexico Railroad with Daffodil Lateral 1 to the left. View to the east.

SECTION 7 Discussion

The survey of the Project area resulted in the relocation of portions of seven previously documented historic built-environment resources, including the Niland to Calexico Railroad (P-13- 008682), the Central Main Canal, the Dogwood Canal, the Beech Canal and Drain system, a historic residence at 602 Dogwood Road and two additional irrigation-related features, the Daffodil Canal and Date Drain No. 3. These resources are discussed in further detail below and were discussed in the original Clark and Torres 2024 report (Appendix D).

7.1 Niland to Calexico Railroad (P-13-008682/CA-IMP-8166H)

A portion of the proposed Optional Routes 1, 2, and 3 alignments intersect with the Niland to Calexico Railroad situated between Ware Road and Pfizer Road and north of Jasper Road and south of East Fawcett Road (Township 16 South, Range 14 East, Sections 28 and 33) (Figure 5-5).

The section of railroad the intersects with the transmission alignments consist of a single set of tracks resting - on a gravel ballast (Figures 7-1 and 7-2). The ballast is approximately 18 to 20 feet in width and roughly 2 to 3 feet in height. In the intersecting section, a monopole transmission line spans the tracks and a utility line consisting of single wood poles parallels the easter side of the railroad alignment. The current tracks appear to be maintained and in good condition.

In 2003, the Imperial Valley Desert Museum initially recorded the Niland to Calexico Railroad. The railroad consists of an approximately 40-mile-long rail line that branches from the Southern Pacific Railway at Niland and extends in a southerly direction towards Calexico. The resource is composed of a standard gauge track on a gravel base. Constructed in 1903, the railroad connected the main Southern Pacific line with cities throughout Imperial County. By 1904, the line had been extended to Calexico.

CRHR Evaluation

Currently, the Niland to Calexico Railroad (P-13-008682) has not undergone formal evaluation for potential listing in the CRHR. This historic-era transportation infrastructure represents a significant component of the region's railroad development; however, a comprehensive assessment of its eligibility under the CRHR criteria has not been conducted as part of these cultural resources study. As discussed in the impact analysis (Section 6.1), the proposed Project has been designed to completely avoid this resource.

A formal CRHR evaluation is not required when a historic property can be entirely avoided through project design. Since the Project would have no impact on this segment of the railroad, no effects would occur to this resource and would remain unevaluated for listing in the CRHR.



Figure 7-1. Overview of the Niland to Calexico Railroad with Heber 1 to the left. View to the east-southeast.



Figure 7-2. Overview of the Niland to Calexico Railroad. View to the northwest.

7.2 Central Main Canal (P-13-012243)

The three interconnection alignments intersect the Central Main Canal in three separate sections of this resource. Optional Routes 1 and 2 intersect the Central Main Canal east of Dogwood Road at the intersection of Ware Road and Willoughby Road. Optional Route 3 intersects the Central Main Canal where Dogwood Road intersects with Willoughby Road.

The Central Main Canal at each intersecting location is approximately 100 feet (30.5 meters) in width and is characterized by sloped earthen banks flanked on each side by unimproved roads (Figure 7-3). Catalyst observed no changes in the condition of the resources since Chronicle Heritage documented the resource in October 2023, and reported in 2024 (Clark and Torres 2024).

CRHR Evaluation

In 2023, PaleoWest previously recommended the Central Main Canal eligible for listing in the CRHR under Criterion 1 due to its association with historical events that have significantly contributed to the broad patterns of California's history (Clark and Severen 2023) with Chronicle Heritage reiterating the 2023 eligibility recommendation in 2024 (Clark and Torres 2024).

During the 2025 recordation, the Central Main Canal physical condition was assessed and found to be unchanged from the 2023 recordation and 2024 revisit. The recommendation of eligibility under Criterion 1 for listing in the CRHR remains appropriate. An impact analysis for this resource is provided in Section 6.1.



Figure 7-3. Overview of the Central Main Canal. View to the west-northwest.

7.3 Dogwood Canal (P-13-008987)

A portion of Route 3 for the proposed interconnection alignment intersects the Dogwood Canal east of Dogwood Road in Township 16 South, Range 14 East, Section 33. The Dogwood Canal is part of the Imperial Irrigation District (IID) canal system consists of an open channel that has a top width ranging between 20 to 60 feet (6 to 18 meters). It is primarily characterized by earthen banks with some segments noted as having concrete lining just west of Dogwood Road and along a 0.5 -mile stretch east of Pitzer Road. Exact dates of construction have not been established; however, historical maps indicate that the linear resource in this section was operational by 1915 (USGS 1915). A previously documented lateral, Dogwood Lateral 2, associated with the canal was recorded by Chronicle Heritage in 2024 and revisited by Catalyst in 2025. The Dogwood Lateral 2 is in Section 32, Township 16 South, Range 14 East (Figure 6-1). The 0.5-mile-long lateral segment extends west of Dogwood Road north of the Heber Geothermal Energy Complex. The lateral consists of an open, concrete-lined structure that has a top width of approximately 8 to 10 feet (2.4 to 3 meters) and is an unknown depth (Figure 7-4 through 7-6). Historic maps indicate that the lateral was in use by the early 1940s (USGS 1943).

CRHR Evaluation

An evaluation of significance conducted by PaleoWest in 2023 and by Chronicle Heritage in 2024 (Clark and Torres 2024) concluded that although the Dogwood Canal meets Criterion 1 for listing in the CRHR, the resource lacked integrity of setting, feeling, association, workmanship, and materials (Clark and Severen 2023). Due to the loss of integrity, PaleoWest reasoned that the character-defining aspects of the Dogwood Canal do not retain sufficient integrity to convey its significance under Criterion 1. As such, the resource was not eligible for the CRHR. The 2023 and 2024 recommendation of the Dogwood Canal not eligible for listing in the CRHR remains appropriate. The portion of the canal system encompassing the Dogwood Lateral 2 appears to also lack integrity. The construction of the Heber Geothermal Energy Complex immediately adjacent to the lateral canal has compromised the lateral's integrity of setting, feeling, and association. Additionally, sometime after its construction, the lateral was lined with concrete, which has impacted the resource's integrity of design, workmanship, and materials. Due to the loss of integrity, Dogwood Lateral 2 does not contribute to the overall significance of the resource and the 2023 and 2024 recommendation not eligible for listing in the CRHR remains appropriate.



Figure 7-4. Overview Dogwood Canal headgates at Dogwood Road. View to the north-northwest.



Figure 7-5. Overview of Dogwood Canal at Dogwood Road. View to the south-southwest.



Figure 7-6. Overview Dogwood Canal and headgate for Dogwood Lateral 2 at Dogwood Road. View to the west.

7.4 Beech Canal and Drain

Segments of the proposed solar field and interconnection alignments abut and/or intersect Beech Canal and its laterals in Township 17 South, Range 14 East, Sections 3 and 4 (Figure 7-7 through 7-9). The Beech Canal consists of an open, concrete-lined structure that has a top width ranging between 12 and 16 feet (3.6 and 4.8 meters) with an unknown depth. The laterals are smaller in size with a top width of approximately 6 feet (1.8 meters) and a bottom width of approximately 4 feet (1.2 meters). The depth of the laterals is roughly 4 feet (1.2 meters). The Beech Canal and Drain was originally observed and documented by PaleoWest in 2023 (Clark and Severen 2023) and revisited by Chronicle Heritage in 2024 (Clark and Torres 2024). No changes or alterations were observed by Catalyst during the 2025 survey.

CRHR Evaluation

In 2023, PaleoWest conducted an evaluation of significance and concluded that the Beech Canal and Drain met Criterion 1 for listing in the CRHR (Clark and Severen 2023) with Chronicle Heritage reaffirming the recommendation in 2024 (Clark and Torres 2024). However, the linear resource lacked integrity of setting, feeling, association, workmanship and materials. Due to this loss of integrity, Paleowest reasoned that the character-defining aspects of the Beech Canal and Drain do not retain sufficient integrity to convey its significance under Criterion 1 and concluded that the resource was not eligible for listing in the CRHR. In 2025, Catalyst revisited the resource and observed that the condition of the resources has not changed, the 2023 and 2024 recommendation of not eligible for listing in the CRHR remains appropriate.



Figure 7-7. Overview of Beech Canal and Drain at southern end of solar field area north of Cole Road. View to the south-southeast.



Figure 7-8. Overview of Beech Canal and Drain along Route 3. View to the east.



Figure 7-9. Overview from Central Main Canal of Beech Drain along Route 1 and 2. View to the south.

7.5 602 Dogwood Road

In 2024, a historic-era residential and accessory building (utility shed) were documented at the southwest corner of the proposed parasitic solar field (Clark and Torres 2024). The documentation by Chronicle Heritage in 2024 recorded a primary building with a vernacular single-family residence that is clad in T-11 siding and featured a low-pitched, side-gabled roof sheathed in composition shingles (Clark and Torres 2024). The noted wooden accessory building is located adjacent to the northeast corner of the residence and appears to have been utilized as a utility shed. The accessory building was noted as dilapidated and included an open doorway and flat roof. The building is clad in a combination of an oriented strand board and plywood sheeting.

During Catalyst's 2025 site revisit, the historic-era residential building was observed to be absent from the property, indicating it had been demolished or removed since the previous recordation. The accessory building (utility shed), however, remains present and was documented during the site visit (Figures 7-1- through 7-11). The accessory building appeared derelict with a flat roof and open doorway. Catalyst observed that panels of plywood sheeting were missing from the south, west and north façades of the structure.

CRHR Evaluation

During the 2024 evaluation by Chronicle Heritage, the property at 602 Dogwood Road did not appear to be a significant building in the Heber area or Imperial County. Archival research found no information to assert that the single-family residence and utility shed were associated with a pattern of development pertinent to state and local histories regarding dairy farming, alfalfa farming, and mining. Therefore, the property did not appear to be eligible for listing in the CRHR under Criterion 1. Additionally, the property could not be associated with a person, or persons, of historic significance at the state level; therefore, the property was not eligible for listing under Criterion 2. The residence was a vernacular building that does not reflect a particular architectural style and is no longer present on the property. Furthermore, both the residence and utility shed appear were constructed with common materials, construction methods, and do not appear to stand out as a significant construction project. The single-family residence and utility shed also do not appear to be the work of a master architect and builder. Therefore, the property is not eligible for listing in the CRHR under Criterion 3. The additional study of the buildings at 602 Dogwood Road is unlikely to yield significant information on twentieth-century settlement in the Heber area of Imperial County and has exhausted its data potential during the 2024 and 2025 documentation. As a result, the resource was not recommended eligible for listing in the CRHR under Criterion 4.

The initial recordation by Chronicle Heritage recommended the 602 Dogwood Road not eligible for inclusion in the CRHR. Based on the original recording and the 2025 revisit by Catalyst, the recommendation of 602 Dogwood Road as not eligible for listing in the CRHR remains appropriate.



Figure 7-10. Overview of the south and west façades of the accessory building View to the northeast.



Figure 7-11. An overview of the where the residential building was noted in 2023. Red arrow points to the residential remains. View to the northwest.

7.6 Daffodil Canal and Lateral 1

The eastern end of proposed Optional Routes 1, 2, and 3 of the interconnection alignment runs adjacent to a lateral canal (Daffodil Lateral 1) associated with the Daffodil Canal. The Daffodil Canal branches off the Central Main Canal near the Pfizer Road and Jasper Road intersection and is part of the IID system. This linear resource runs north along the west side of Pfizer Road for approximately one mile. The canal consists of an open concrete-lined channel that has a top width ranging from approximately 18 to 20 feet (5.4 to 6 meters) with an unknown depth; a 440-foot-long (134 meter) portion of the canal east of Heber 1 Geothermal Energy Facilities is buried. At least two check/drop structures are present along its course, each of which consists of gates with chute and cement walls that operate with a jack-type lifting mechanism resting on a wooden cross beam. The condition of the gates and hardware associated with these features suggest they have been replaced at some point and are not original to the structure (Figures 7-10 and 7-11).

The Daffodil Lateral 1 extends off the Daffodil Canal just north of the Heber 1 Geothermal Energy Facilities. The lateral overall measures 0.5 miles in length and consists of an open concrete-lined channel with a top width of approximately 10 feet (3 meters) and an unknown depth. Although the date of construction of the canal and lateral is not known, historical maps indicate that it was operational by 1940.

CRHR Evaluation

The Daffodil Canal and Lateral 1 is part of IID's canal system, which was initially built in the early twentieth century. The construction and operation of the Daffodil Canal and its associated lateral are an important event in the early settlement of the Imperial Valley. The canal significantly increased agricultural productivity between the New River and Alamo River. While the Daffodil Canal and Lateral 1 can be directly associated historical events, several factors preclude the resources eligibility under Criterion 1. The canal has been extensively modified with concrete lining, new gates and hardware, and buried sections, compromising its original design, workmanship, and materials. Due to the loss of integrity, the Daffodil Canal and Lateral 1 have lost their ability to convey significance under Criterion 1. While the Daffodil Canal was funded and constructed by the IID but cannot be attributed to a specific individual and does not meet significance under Criterion 2. The Daffodil Canal and its associated laterals are simple in design and construction and utilitarian in nature, and the resource does not exhibit any distinctive characteristics or engineering merits that would suggest it is significant under Criterion 3. Finally, the Daffodil Canal does not have the potential to yield any information important to the study of twentieth century channel construction and is therefore not eligible under Criterion 4.

The alignment of the Daffodil Canal has not changed since its construction in the early part of the twentieth century and as such, the resource retains integrity of location. Although agricultural fields are still prevalent in the vicinity of the Daffodil Canal, the construction and operation of industrial energy facilities in the immediate vicinity has resulted in the loss of the resource's integrity of setting, feeling, and association. The resource has experienced extensive alterations including lining the canal with concrete, replacing gates and hardware, and burying portions of the canal. As a result of these alterations, the structure lacks integrity of design, workmanship, and materials.

Based on these findings in 2024, Chronicle Heritage recommended the Daffodil Canal and Lateral 1 not eligible for inclusion in the CRHR. After Catalyst's 2025 revisit of the resource, the 2024 recommendation of the Daffodil Canal and Lateral 1 as not eligible for listing in the CRHR remains appropriate.



Figure 7-12. Overview of Daffodil Lateral 1. View to the east.



Figure 7-13. Overview of headgates leading to Daffodil Lateral 1. View to the southeast.

7.7 Date Drain No. 3

Portions of Optional Routes 1, 2, and 3 of the proposed interconnection alignments situated east of Dogwood Road parallel a historic drainage channel (Date Drain No. 3). The channel is an approximately 0.7-mile-long, L-shaped earth drainage ditch that includes a roughly 0.25-mile-long segment running in a north-south direction parallel to the eastern side of Dogwood Road. A 0.55-mile-long segment of the drainage runs west-east along the mid-section of Township 16 South, Range 14 East, Section 33 (Figure 6-1). The drainage was constructed to remove excess water from irrigated fields and appears to be associated with the Date Canal. The upper width of the drainage is approximately 20 to 30 feet (6 to 9 meters) with a depth roughly 8 to 10 feet (2.4 to 3 meters) (Figures 7-14 and 7-15). While the Date Canal appears on a 1915 topographic map; Date Drain No. 3 first appears on a 1957 topographic map (USGS 1915. 1957a).

CRHR Evaluation

The Date Canal is part of IID's canal system, which was initially built in the early twentieth century. The construction and operation of the Date Drain No. 3 and its associated lateral are an important event in the early settlement of the Imperial Valley. The canal significantly increased agricultural productivity between the New River and Alamo River.

While the Date Canal can be directly associated with historical events, several factors preclude Date Drain No. 3 eligibility under Criterion 1. The Date Drain No. 3 is a minor non-contributing component of the irrigation system whose construction appears to postdate the Date Canal by several decades and cannot be directly associated with events that contributed to the broad patterns of our history. Due to this information, it is recommended not eligible under Criterion 1. The Date Drain No. 3 was likely funded and constructed by the IID but cannot be attributed to a specific individual and does not meet significance under Criterion 2. The Date Drain No. 3 is simple in design and construction and is utilitarian in nature, and the resource does not exhibit any distinctive characteristics or engineering merits that would suggest it is significant under Criterion 3. Finally, the Date Drain No. 3 does not have the potential to yield any information important to the study of twentieth century channel construction and is therefore not eligible under Criterion 4.

Based on the evaluation conducted in 2024 by Chronicle Heritage and revisit by Catalyst in 2025, the Date Drain No. 3 remains unchanged and the recommendation of not eligible for inclusion in the CRHR remains appropriate.



Figure 7-14. Overview of Date Drain No. 3 that parallels Routes 1, 2, and 3 at Ware Road. View to the east.



Figure 7-15. Overview of Date Drain No. 3 at Dogwood Road. View to the north.

SECTION 8 Management Recommendations

In May 2025 Catalyst conducted a cultural resources assessment for the proposed Heber 1 Parasitic Solar Project, which included background and archival research, an intensive pedestrian survey, and resources documentation and evaluation, building upon Chronicle Heritage's 2024 survey (Appendix D).

As a result of these efforts a total of seven previously recorded historic period cultural resources were identified and documented in the Project area. These include the Niland to Calexico Railroad (P-13-008682), a historical residential property (602 Dogwood Road), and five irrigation-related resources including the Central Main Canal (P-13-012243), Dogwood Canal (P-13-008987), Beech Canal and Drain, Daffodil Canal and Lateral 1, and Date Drain No. 3.

The results of the study indicate that two of the identified resources, the Central Main Canal (P-13-012243) and the Niland to Calexico Railroad (P-13-008682) are recommended eligible or remain unevaluated for listing in the CRHR, respectively. An impacts assessment is necessary to determine if the proposed Project will result in a substantial adverse change in the significance or potential significance of either of these cultural resources, pursuant to § 15064.5.

No further cultural resources management is recommended for the five resources that are not eligible for listing in the CRHR (602 Dogwood Road, Dogwood Canal [P-13-008987], Beech Canal and Drain, Daffodil Canal and Lateral, and Date Drain No. 3) as the Project would not cause a substantial adverse change in the significance of the historical resource pursuant to § 15064.5.

8.1 Impacts Assessment

Based on the current Project design, the proposed interconnection routes (Optional Route 1, 2, and 3) will intersect with the Central Main Canal (P-13-012243) at three proposed locations and will also intersect the Niland to Calexico Railroad (P-13-008682). The Project design proposes for the interconnection line to potentially be installed underground, passing beneath both the Central Main Canal and the Niland to Calexico Railroad alignment.

The underground installation approach ensures that the Project would avoid any direct physical alteration or disturbance to the Central Main Canal's structure, embankments, or operational infrastructure. Similarly, the subsurface crossing would preserve the integrity of the railroad corridor without requiring modifications to the existing rails, roadbeds, or associated infrastructure. The buried nature of the proposed interconnection routes means that both cultural resources would remain physically intact and unaltered by the proposed Project construction and operational activities.

As such, the proposed Project construction and operational activities will not result in any physical alteration of the identified cultural resources. Because the Project will avoid both the Central Main Canal and the Niland to Calexico Railroad, Catalyst recommends a finding of ***no impact*** to historical or archaeological resources under CEQA.

8.2 Management Recommendations

The absence of known archaeological resources within one mile of the proposed Project suggests that this area is characterized by a low sensitivity for archaeological remains. However, there is a potential, albeit minimal, to encounter unanticipated cultural resources or human remains during ground-disturbing activities. Should there be changes in the Project design or actions proposed outside the currently defined Project area that have the potential to impact significant cultural resources, then additional cultural resource studies may be required.

Based on state and agency regulations and guidelines, to mitigate any potential adverse impacts that could occur if there were a post review discovery of buried cultural resources or human remains, Catalyst recommends the following measures below.

8.2.1 Post Review Discovery of Cultural Resources

If cultural resources are encountered during ground-disturbing activities, work in the immediate area must halt and a qualified archaeologist should be contacted immediately to evaluate the find. If the discovery proves to be significant under CEQA, additional work such as data recovery excavation and Native American consultation may be warranted to mitigate any significant impacts.

8.2.2 Discovery of Human Remains

If human remains are identified, regulations outlined in the State of California Health and Safety Code Section 7050.5 state that no further disturbance shall occur until the County Coroner, in this case the Imperial County Coroner, has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98.

In the event of an unanticipated discovery of human remains, the Imperial County Coroner must be notified immediately. If the remains are determined to be Indigenous, the Coroner will notify the Native American Heritage Commission, who will determine and notify a most likely descendent (MLD). The MLD shall complete the inspection of the site within 48 hours of being granted access and provide recommendations as to the treatment of the remains to the landowner.

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Appendix A Records Search Results (Confidential)

Appendix B Native American Outreach



NATIVE AMERICAN HERITAGE COMMISSION

November 14, 2023

Tiffany Clark
PaleoWest

Via Email to: tclark@paleowest.com

CHAIRPERSON
Reginald Pagaling
Chumash

VICE-CHAIRPERSON
Buffy McQuillen
Yokayo Pomo, Yuki,
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SECRETARY
Sara Dutschke
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PARLIAMENTARIAN
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COMMISSIONER
Isaac Bojorquez
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Kumeyaay

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Serrano

COMMISSIONER
Reid Milanovich
Cahuilla

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Vacant

EXECUTIVE SECRETARY
Raymond C.
Hitchcock
Miwok, Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710

Re: 23-PC-00758 ORMAT Heber 1 Study Project, Imperial County

Dear Ms. Clark:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were positive. Please contact the tribes on the attached list for more information. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Pricilla.Torres-Fuentes@nahc.ca.gov.

Sincerely,

Pricilla Torres-Fuentes

Pricilla Torres-Fuentes
Cultural Resources Analyst

Attachment

**Native American Heritage Commission
Native American Contact List
Imperial County
11/14/2023**

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Imperial	Barona Group of the Capitan Grande	F	Art Bunce, Attorney		(760) 489-0329		buncelaw@aol.com	Diegueno	Imperial,San Diego	7/25/2023
	Campo Band of Diegueno Mission Indians	F	Ralph Goff, Chairperson	36190 Church Road, Suite 1 Campo, CA, 91906	(619) 478-9046	(619) 478-5818	rgoff@campo-nsn.gov	Diegueno	Imperial,Orange,Riverside,San Diego	
	Cocopah Indian Reservation	F	Jill McCormick, Cultural Resources Manager	14515 S. Veterans Drive Somerton, AZ, 85350	(928) 722-7521		mccormickj@cocopah.com	Cocopah	Imperial,Riverside	
	Ewiiapaayp Band of Kumeyaay Indians	F	Michael Garcia, Vice Chairperson	4054 Willows Road Alpine, CA, 91901	(619) 933-2200	(619) 445-9126	michaalg@leaningrock.net	Diegueno	Imperial,Orange,Riverside,San Diego	
	Ewiiapaayp Band of Kumeyaay Indians	F	Robert Pinto, Chairperson	4054 Willows Road Alpine, CA, 91901	(619) 368-4382	(619) 445-9126	ceo@ebki-nsn.gov	Diegueno	Imperial,Orange,Riverside,San Diego	
	Iipay Nation of Santa Ysabel	F	Virgil Perez, Chairperson	P.O. Box 130 Santa Ysabel, CA, 92070	(760) 765-0845	(760) 765-0320		Diegueno	Imperial,San Diego	
	Iipay Nation of Santa Ysabel	F	Clint Linton, Director of Cultural Resources	P.O. Box 507 Santa Ysabel, CA, 92070	(760) 803-5694		clint@redtailenvironmental.com	Diegueno	Imperial,San Diego	
	Inaja-Cosmit Band of Indians	F	Rebecca Osuna, Chairperson	2005 S. Escondido Blvd. Escondido, CA, 92025	(760) 737-7628	(760) 747-8568		Diegueno	Imperial,San Diego	
	Jamul Indian Village	F	Erica Pinto, Chairperson	P.O. Box 612 Jamul, CA, 91935	(619) 669-4785	(619) 669-4817	epinto@jiv-nsn.gov	Diegueno	Imperial,San Diego	
	Jamul Indian Village	F	Lisa Cumper, Tribal Historic Preservation Officer	P.O. Box 612 Jamul, CA, 91935	(619) 669-4855		lcumper@jiv-nsn.gov	Diegueno	Imperial,San Diego	9/5/2018
	Kwaaymii Laguna Band of Mission Indians	N	Carmen Lucas,	P.O. Box 775 Pine Valley, CA, 91962	(619) 709-4207			Kwaaymii Diegueno	Imperial,San Diego	6/20/2023
	La Posta Band of Diegueno Mission Indians	F	Gwendolyn Parada, Chairperson	8 Crestwood Road Boulevard, CA, 91905	(619) 478-2113	(619) 478-2125	LP13boots@aol.com	Diegueno	Imperial,Orange,Riverside,San Diego	
	Manzanita Band of Kumeyaay Nation	F	Angela Elliott Santos, Chairperson	P.O. Box 1302 Boulevard, CA, 91905	(619) 766-4930	(619) 766-4957		Diegueno	Imperial,Orange,Riverside,San Diego	
	Mesa Grande Band of Diegueno Mission Indians	F	Michael Linton, Chairperson	P.O. Box 270 Santa Ysabel, CA, 92070	(760) 782-3818	(760) 782-9092	mesagrandeband@msn.com	Diegueno	Imperial,Orange,Riverside,San Diego	
	Quechan Tribe of the Fort Yuma Reservation	F	Jill McCormick, Historic Preservation Officer	P.O. Box 1899 Yuma, AZ, 85366	(928) 261-0254		historicpreservation@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
	Quechan Tribe of the Fort Yuma Reservation	F	Jordan Joaquin, President, Quechan Tribal Council	P.O.Box 1899 Yuma, AZ, 85366	(760) 919-3600		executivesecretary@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
	Quechan Tribe of the Fort Yuma Reservation	F	Manfred Scott, Acting Chairman Kw'ts'an Cultural Committee	P.O. Box 1899 Yuma, AZ, 85366	(928) 210-8739		culturalcommittee@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
	San Pasqual Band of Diegueno Mission Indians	F	John Flores, Environmental Coordinator	P. O. Box 365 Valley Center, CA, 92082	(760) 749-3200	(760) 749-3876	johnf@sanpasqualtribe.org	Diegueno	Imperial,San Diego	8/16/2016
	San Pasqual Band of Diegueno Mission Indians	F	Allen Lawson, Chairperson	P.O. Box 365 Valley Center, CA, 92082	(760) 749-3200	(760) 749-3876	allenl@sanpasqualtribe.org	Diegueno	Imperial,San Diego	
	Sycuan Band of the Kumeyaay Nation	F	Bernice Paipa, Cultural Resource Specialist	Sycuan Cultural Center: 910 Willow Glen Drive El Cajon, CA, 92019	(619) 445-6917		bpai2@sycuan-nsn.gov	Kumeyaay	Imperial,San Diego	8/7/2023
	Sycuan Band of the Kumeyaay Nation	F	Cody Martinez, Chairman	Sycuan Tribal Office: 1 Kwaaypaay Court El Cajon, CA, 92019	(619) 445-2613		cmartinez@sycuan-nsn.gov	Kumeyaay	Imperial,San Diego	8/7/2023
	Viejas Band of Kumeyaay Indians	F	Ernest Pingleton, THPO	1 Viejas Grade Road Alpine, CA, 91901	(619) 445-3810		epingleton@viejas-nsn.gov	Kumeyaay	Imperial,San Diego	6/29/2023
	Viejas Band of Kumeyaay Indians	F	Ray Teran, Resource Management Director	1 Viejas Grade Road Alpine, CA, 91901	(619) 659-2312		rtaran@viejas-nsn.gov	Kumeyaay	Imperial,San Diego	6/29/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed 23-PC-00758 ORMAT Heber 1 Study Project, Imperial County.

Record: PROJ-2023-005329
Report Type: List of Tribes
Counties: Imperial
NAHC Group: All



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REDLANDS, CALIFORNIA
3019th Street, Suite 114
Redlands, California 92374

November 20, 2023

Steven Cope, Spokesperson
San Pasqual Band of Diegueno Mission Indians
P.O. Box 365
Valley Center, CA, 92082

EXAMPLE LETTER

RE: Native American Outreach for the Ormat Heber 1 Solar Project, Imperial County, California

Dear Mr. Cope,

Chronicle Heritage is conducting a cultural resource investigation for a proposed Ormat Heber 1 Solar Project (Project) near the community of Heber, Imperial County, California. The Project proposes to develop a 12-megawatt solar energy facility that would provide parasitic load to the existing Heber 1 Geothermal Energy Facility. The proposed solar energy facilities will be developed immediately south of the proposed Dogwood/Heber 2 parasitic solar fields and will be connected by a buried medium-voltage interconnection line to the existing Heber 1 Geothermal Facility. The proposed Project site encompasses 127 acres of private land with two proposed generation interconnection transmission lines. The Project is depicted in Section 33, Township 16 South, Range 14 East, and Section 3, Township 17 South, Range 14 East on the Heber, CA topographic quadrangle (see attached map). The project is subject to compliance with the California Environmental Quality Act.

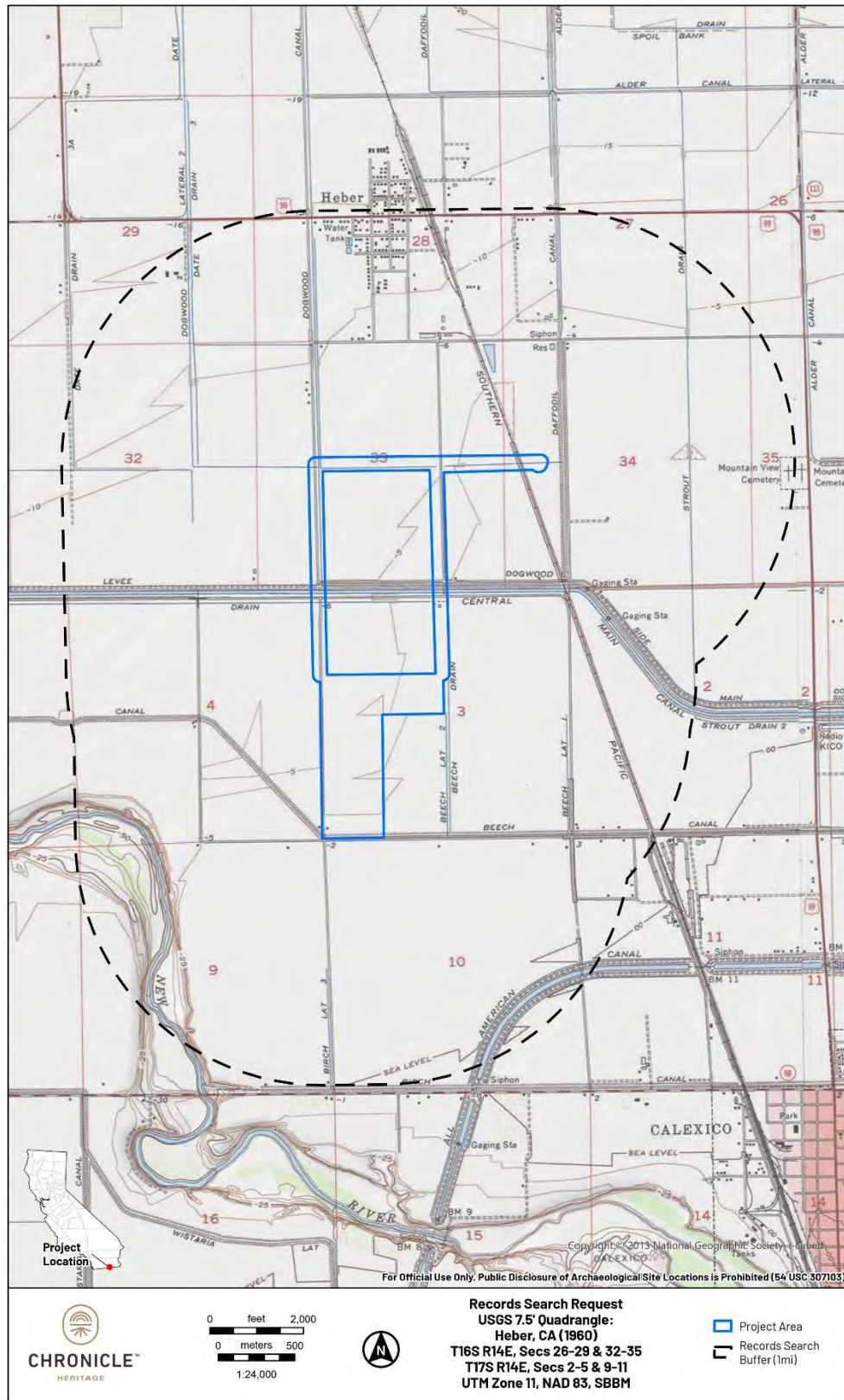
A search of the Sacred Lands File was requested from the Native American Heritage Commission for the Project on October 10, 2023. Although a response has not yet been received from the NAHC, a recent Sacred Lands File search for the adjacent Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Parasitic Facilities Projects resulted in positive findings. The contact list provided in the NAHC's response included your information with a suggestion that we contact you for information on Native American resources that may be present in the Project vicinity.

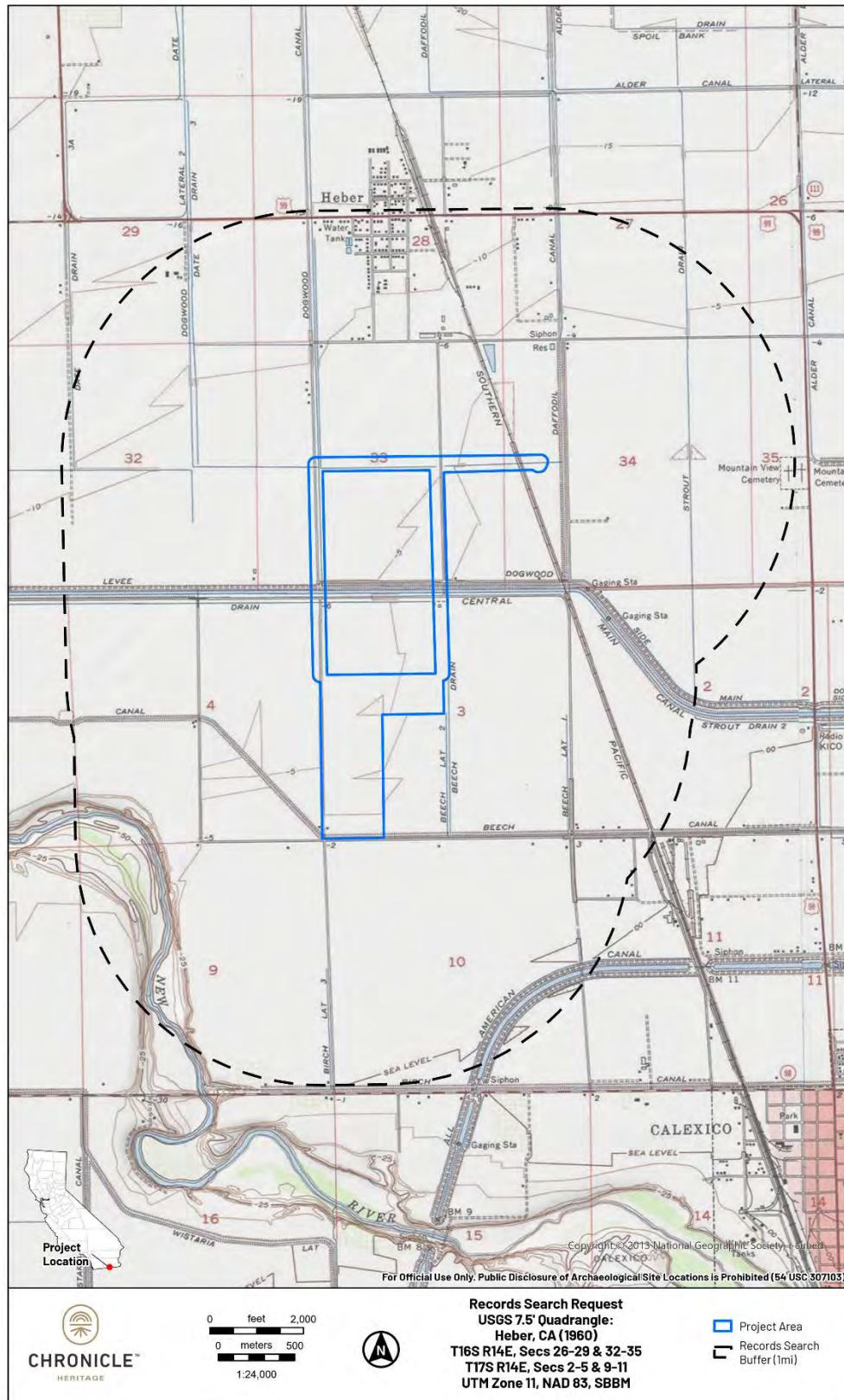
If you have knowledge of traditional cultural resources that may exist within or near the Project area shown on the enclosed map, please contact me by email at tclark@chronicleheritage.com or by telephone at (310) 210-9884. We appreciate any information you can provide.

Sincerely,

Tiffany Clark, PhD, RPA
Regional Principal Archaeologist







Native American Contact/Response Matrix				
Recommended Contacts (Name and Tribal Affiliation)	Contact Info	Initial Contact	Follow up Attempts	Comments/Notes
Barona Group of the Capitan Grande Raymond Welch, Chairperson	1095 Barona Road Lakeside, CA, 92040 Phone: (619) 443 - 6612 Fax: (619) 443-0681 counciloffice@barona-nsn.gov mnavarro@barona-nsn.gov Manuel Navarro handles cultural issues	Letter sent via email 11/7/2023	Called 11/20/23	No response received.
Campo Band of Diegueno Mission Indians Ralph Goff, Chairperson Marcus Cuero, Chairperson	36190 Church Road, Suite 1 Campo, CA, 91906 Phone: (619) 478 - 9046 Fax: (619) 478-5818 rgoff@campo-nsn.gov	Letter sent via email 2/28/23; Email returned and letter sent via USPS on 11/8/23	N/A	Daniel Tsosie, Cultural Resource Manager for the Campo Band of Mission Indians, emailed on 11/16/23 and stated that the Campo Band had concerns regarding the Project. The Project area is within or adjacent to Kumeyaay travel/migration/ and trade routes. Mr. Tsosie requested a Native American Monitor be present during public surveys, soils testing, and during ground disturbance. He also requested that Campo Band is included be included in the treatment and monitoring plan.
Cocopah Indian Reservation Jill McCormick, Cultural Resources Manager	14515 S. Veterans Drive Sommerton, AZ, 85350 Phone: (928) 722 - 7521 mccormickj@cocopah.com	Letter sent via email 11/7/2023	Called 11/20/23	No response received.
Ewiiapaayp Band of Kumeyaay Indians Robert Pinto, Chairperson	4054 Willows Road Alpine, CA 91901 ceo@ebki-nsn.gov	Letter sent via email 11/7/2023	N/A	No response received.
Ewiiapaayp Band of Kumeyaay Indians Michael Garcia, Vice Chairperson	4054 Willows Road Alpine, CA 91901 michaelg@leaningrock.net	Letter sent via email 11/7/2023	N/A	No response received.
Iipay Nation of Santa Ysabel Virgil Perez, Chairperson Bernice Paipa, Chairperson	P.O. Box 130 Santa Ysabel, CA 92070 Phone: (760) 765 - 0845 Fax: (760) 765-0320 mhuesca@iipaynation-nsn.gov bpaipa@iipaynation-nsn.gov	Letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
Iipay Nation of Santa Ysabel Clint Linton, Director of Cultural Resources	P.O. Box 507 Santa Ysabel, CA 92070 Phone: (760) 803 - 5694 clint@redtailenvironmental.com	Letter sent via email 11/8/23	Called 11/20/23	No response received.

Native American Contact/Response Matrix				
Inaja-Cosmit Band of Indians Rebecca Osuna, Chairperson	2005 S. Escondido Blvd. Escondido, CA, 92025 Phone: (760) 737 - 7628 Fax: (760) 747-8568 inaja_cosmit@hotmail.com	Letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
Jamul Indian Village Erica Pinto, Chairperson	P.O. Box 612 Jamul, CA 91935 Phone: (619) 669 - 4785 Fax: (619) 669-4817 epinto@jiv-nsn.gov	Letter sent via email on 11/7/23	N/A	Email received on 11/7/2023 stating that the Jamul Indian Village defers to tribes closer to the Project.
Jamul Indian Village Lisa Cumper, Tribal Historic Preservation Officer	P.O. Box 612 Jamul, CA 91935 Phone: (619) 669 - 4855 lcumper@jiv-nsn.gov	Letter sent via email on 11/7/23	N/A	See response above.
Kwaaymii Laguna Band of Mission Indians Carmen Lucas	P.O. Box 775 Pine Valley, CA, 91962 Phone: (619) 709 - 4207	Letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
La Posta Band of Diegueno Mission Indians Gwendolyn Parada, Chairperson	8 Crestwood Road Boulevard, CA 91905 LP13boots@aol.com	Letter sent via email on 11/7/23	Called 11/20/23	No response received.
La Posta Band of Diegueno Mission Indians Javaughn Miller, James Hill, Tribal Administrator	8 Crestwood Road Boulevard, CA 91905 Phone: (619) 478 - 2113 Fax: (619) 478-2125 jmiller@LPtribe.net	Letter sent via email 11/7/23; email returned and letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
Manzanita Band of Kumeyaay Nation Angela Elliott Santos, Chairperson	P.O. Box 1302 Boulevard, CA 91905 Phone: (619) 766 - 4930 Fax: (619) 766-4957 ljbirdsinger@aol.com	Letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
Mesa Grande Band of Diegueno Mission Indians Michael Linton, Theresa Hernandez, Chairperson	P.O Box 270 Santa Ysabel, CA 92070 Phone: (760) 782 - 3818 Fax: (760) 782-9092 mesagrandeband@msn.com	Letter sent via email 11/7/23; email returned and letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
Quechan Tribe of the Fort Yuma Reservation H. Jill McCormick, Historic Preservation Officer	P.O. Box 1899 Yuma, AZ 85366 Phone: (760) 572 - 2423 historicpreservation@quechantribe.com	Letter sent via email on 11/7/23	Called 11/20/23; Phone line disconnected	Ms. McCormick is no longer Historic Preservation Officer, and Chairman Scott is acting in this role currently (see contact info below).

Native American Contact/Response Matrix				
Quechan Tribe of the Fort Yuma Reservation Manfred Scott, Acting Chairman Kw'ts'an Cultural Committee	P.O. Box 1899 Yuma, AZ 85366 Phone: (928) 750 - 2516 scottmanfred@yahoo.com; culturalcommittee@quechantribe.com	Letter sent via email on 11/7/23	Called 11/20/23	Spoke to Chairman Scott on 11/20/23 who stated he was planning to do a site visit, but was unable to make it out to the site as of yet. He intends to do the site visit soon and will reach out to Dr. Clark if he has any comments or questions.
San Pasqual Band of Diegueno Mission Indians Allen Lawson, Desiree Morales-Whitman, Chairperson	P.O. Box 365 Valley Center, CA, 92082 Phone: (760) 749 - 3200 Fax: (760) 749-3876 allenl@sanpasqualtribe.org; desireem@sanpasqualtribe.org	Letter sent via email 11/7/23; Email returned and letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
San Pasqual Band of Diegueno Mission Indians Steven Cope, Spokesperson	P.O. Box 365 Valley Center, CA, 92082 Phone: (760) 749 - 3200 Fax: (760) 749-3876 stevenc@sanpasqualtribe.org	Letter sent to new contact on 11/20/23	Called 11/20/23	No response received.
San Pasqual Band of Diegueno Mission Indians John Flores, Environmental Coordinator	P. O. Box 365 Valley Center, CA 92082 Phone: (760) 749 - 3200 Fax: (760) 749-3876	Letter sent via email on 11/7/23	Called 11/20/23	No response received.
Sycuan Band of the Kumeyaay Nation Kristie Orosco, Kumeyaay Resource Specialist	1 Kwaaypaay Court El Cajon, CA, 92019 Phone: (619) 445 - 6917	Letter sent via USPS on 11/8/23	N/A	See response below.
Sycuan Band of the Kumeyaay Nation Cody Martinez, Chairperson	1 Kwaaypaay Court El Cajon, CA, 92019 Phone: (619) 445 - 2613 Fax: (619) 445-1927 ssilva@sycuan-nsn.gov Alexis Vargas at avargas@sycuan-nsn.gov	Letter sent via email on 11/7/23	N/A	On 11/14/2023, Bernice Paipa responded via email on behalf of Chairperson Martinez. Ms. Paipa stated that the Sycuan Cultural Resource Center has consulted their maps and determined the project described is not within the boundaries of the recognized Sycuan Indian Reservation. However, they have determined it is within the boundaries of the Kumeyaay Nation's traditional territory. Imperial County is the homeland to the Kumeyaay Nation and the Sycuan have ancestral ties to this area as well as a historical, cultural, spiritual and religious interest. The Sycuan requested a time to meet and discuss the cultural and archaeological reports and the impact this project will have on the area. In addition, Ms. Paipa requested that Kumeyaay Monitors also be requested during any ground disturbance and surveys.
Torres-Martinez Desert Cahuilla Indians Cultural Committee,	P.O. Box 1160 Thermal, CA, 92274 Phone: (760) 397 - 0300 Fax: (760) 397-8146 Cultural-Committee@torresmartineznsn.gov	Letter sent via email on 11/7/23; email returned and letter sent via USPS on 11/8/23	Called 11/20/23	No response received.

Native American Contact/Response Matrix				
Viejas Band of Kumeyaay Indians John Christman, Chairperson	1 Viejas Grade Road Alpine, CA, 91901 Phone: (619) 445 - 3810 Fax: (619) 445-5337	Letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
Viejas (Baron Long) Group of Capitan Grande of Mission Indians of the Viejas Reservation Ray Teran	1 Viejas Grade Road Alpine, CA 91901 Phone: (619) 445-3810 Fax: (619) 445-5337	Letter sent to new contact on 11/20/23	Called 11/20/23	Ray Teran of the Viejas Band of Kumeyaay Indians (Viejas) responded via email on 11/20/2023 and stated that he had reviewed the letter and determined that the Project site has cultural significance or ties to Viejas. Mr. Teran noted that resources have been located within or adjacent to the proposed Project area. He requested that a Kumeyaay Cultural Monitor be on site for ground disturbing activities and asked to be informed of any new developments such as inadvertent discovery of cultural artifacts, cremation sites, or human remains.
Viejas Band of Kumeyaay Indians Ernest Pingleton, Tribal Historic Officer, Resource Management	1 Viejas Grade Road Alpine, CA, 91901 Phone: (619) 659 - 2314 epingleton@viejas-nsn.gov	Letter sent via email on 11/7/2023	Called 11/20/23	Mr. Pingleton returned call on 11/20 and requested that a Kumeyaay monitor be present during ground disturbance activities for the Project.

Appendix C DPR Site Forms and Continuation Forms

CONTINUATION SHEET

Property Name: Niland to Calexico Railroad

Page 1 of 2

The Imperial Valley Desert Museum initially recorded the Niland to Calexico Railroad (P-13-008682/CA-IMP-8166H) in 2003. The resource consists of an approximately 40-mile long rail line that branches from the Southern Pacific Railway at Niland and extends in a roughly southerly direction to the town of Calexico. The railroad is composed of a standard gauge track with a gravel base. Built between 1903 and 1904, the railroad serves to connect the main Southern Pacific line with cities in Imperial County. The line remains in use to transport resources from Mexico and Imperial County to the rest of the United States.

Chronicle Heritage conducted a survey for the proposed Heber 1 Solar Project in October 2023 (Clark and Torres 2024) Part of this field survey revisited a portion of the railroad north of Jasper Road located between Ware Road and Pfizer Road (Township 16 South, Range 14 East, Sections 28 and 33). At the time of the 2023 revisit, it was noted that a utility line consisting of a single wooden pole runs along the eastern side of the alignment and the tracks appeared to be in good condition.

In May 2025, Catalyst Environmental Solutions revisited as portion of the proposed Optional Routes 1, 2, and 3 alignments intersect with the Niland to Calexico Railroad situated between Ware Road and Pfizer Road and north of Jasper Road and south of East Fawcett Road (Township 16 South, Range 14 East, Sections 28 and 33). The same section that was visited by Chronicle in October 2023.

The section of railroad the intersects with the Heber 1 Parasitic Solar Project proposed transmission alignments and consist of a single set of tracks resting on a gravel ballast. The ballast is approximately 18 to 20 feet in width and roughly 2 to 3 feet in height. In the intersecting section, a monopole transmission line spans the tracks and a utility line consisting of single wood poles parallels the eastern side of the railroad alignment. The current tracks in this location appear to be maintained and in good condition.

Reference: Tipton. Katherine (2025) Cultural Resource Report for the ORMAT Heber 1 Parasitic Solar Project, Imperial County, California. Report prepared by Catalyst Environmental Solutions, Santa Monica, California.

Clark, Tiffany, and Scott Torres (2024) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

Appendix D [Draft] Cultural Resources Assessment for the Ormat Heber 1 Solar Project, Imperial County, California



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Cultural Resources Assessment for the Ormat Heber 1 Solar Project, Imperial County, California

Cultural Resources Assessment for the Ormat Heber 1 Solar Project, Imperial County, California

Prepared by:

Chronicle Heritage

Tiffany Clark, Ph.D., RPA
Scott Torres, M.A.

Prepared for:

Catalyst Environmental Solutions
315 Montana Avenue, Suite 311
Santa Monica, CA 90403

Chronicle Heritage, LLC

55 East Huntington Drive
Arcadia, California, 91006

January 18, 2024

Management Summary

The Ormat Heber 1 Solar Project (Project) proposes to develop a 12-megawatt solar energy facility that would provide parasitic load to the existing Heber 1 Geothermal Energy Facility near the community of Heber, Imperial County, California. The proposed Project area consists of a 155-acre solar array field (Assessor's Parcel Number 059-020-001) with a 2.3-mile-long generation interconnection line route. PaleoWest LLC (dba Chronicle Heritage) was contracted by Catalyst Environmental Solutions to conduct a cultural resource assessment of the Project area in compliance with the California Environmental Quality Act (CEQA). The Imperial County Planning and Development Services will act as the Lead Agency for CEQA compliance.

This report summarizes the methods and results of the cultural resource assessment. The investigation included background research, outreach with the Native American Heritage Commission (NAHC) and Native American groups, a field survey, resource documentation and evaluation, and an impacts analysis. The purpose of the study was to determine the potential of the Project to impact archaeological and historical resources under CEQA.

As part of the background research, a records search was conducted at the South Coastal Information Center to identify prior cultural resources studies and previously recorded cultural resources within one mile of the Project area. In addition, Chronicle Heritage's cultural resource database was also examined to compile information on recently documented resources within the Project vicinity. Results of the background research indicate that 10 previous studies have been completed within the Project area. These studies documented four cultural resources that intersect the Project area including a railroad alignment (P-13-008682; Niland to Calexico Railroad) and three irrigation canals (Central Main [CM] Canal, Dogwood Canal, and Beech Canal and Drain). Although both the Dogwood Canal and Beech Canal and Drain have been recommended not eligible for listing on the California Register of Historical Resources (CRHR), the CM Canal appears to meet Criterion 1 for listing on the CRHR. The Niland to Calexico Railroad (P-13-008682) has not been evaluated for significance.

Chronicle Heritage also requested a search of the Sacred Lands File (SLF) from the NAHC on October 10, 2023. The NAHC responded on November 14, 2023 and noted that the SLF search results were positive. In addition, Chronicle Heritage sent outreach letters to 24 individuals representing 16 local Native American tribal groups on November 7 and 8, 2023 to elicit information on Native American cultural resources that may be located in the vicinity of the proposed Project. Follow-up phone calls to individuals who had not yet responded were conducted on November 20, 2023. To date, six responses have been received.

Chronicle Heritage conducted a pedestrian cultural resource survey of the proposed Project area between October 25 and 27, 2023 with a supplemental survey on January 17, 2024. The surveys encompassed 127 acres of the proposed 155-acre solar field and a 1.3-mile-long portion of the 2.3-mile-long interconnection line alignment; the surveys of the interconnection line included a 300-foot (91-meter) buffer. The remaining portions of the solar field (28 acres) and interconnection line alignment (37 acres) were not included in this field work effort as these areas had been recently surveyed by PaleoWest in February 2023 as part of the Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Parasitic Facilities projects. The four previously recorded historic built-environment resources were relocated with an additional segment of the Dogwood Canal identified in the Project area. A historic residence at 602 Dogwood Road and two additional

irrigation features (Daffodil Canal and Date Drain No. 3) were also documented during the field survey. Chronicle Heritage analyzed the CRHR eligibility of the three newly identified cultural resources under Criteria 1, 2, 3, and 4. None of the resources are recommended eligible for listing on the CRHR.

The findings of the study indicate that only two resources - the CM Canal and the Niland to Calexico Railroad (P-13-008682) - are recommended eligible or are unevaluated for listing on the CRHR, respectively. An impact analysis concluded that both historic-era resources will be avoided by the proposed Project. The remaining five cultural resources (Dogwood Canal, Beech Canal and Drain, 602 Dogwood Road, Daffodil Canal, and Date Drain No. 3) within the Project are not eligible for listing on the CRHR. Based on these findings, Chronicle Heritage recommends a finding of no impact to historical or archaeological resources under CEQA.

In the unlikely event that potentially, significant archaeological materials are encountered during Project-related ground-disturbing activities, all work should be halted in the vicinity of the archaeological discovery until a qualified archaeologist visits the site of discovery and assesses the significance of the archaeological resource. In addition, Health and Safety Code 7050.5, CEQA 15064.5(e), and Public Resources Code 5097.98 mandate the process to be followed in the unlikely event of an accidental discovery of any human remains in a location other than a dedicated cemetery. Finally, if there are changes in the Project design or actions are proposed outside the currently defined Project area that have the potential to impact significant cultural resources, then additional cultural resource studies may be required.

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1 Introduction

The proposed Ormat Heber 1 Solar Project (Project) involves the development of a solar energy facility that would provide parasitic load to the existing Heber 1 Geothermal Energy Facility. PaleoWest LLC (dba Chronicle Heritage) was contracted by Catalyst Environmental Solutions to conduct a cultural resource assessment of the Project area in compliance with the California Environmental Quality Act (CEQA). The Imperial County Planning and Development Services acting as the Lead Agency for CEQA compliance.

1.1 Project Location and Description

The proposed Project site is located near the community of Heber in unincorporated Imperial County, California (Figure 1-1). The Project site encompasses approximately 155 acres of private land on Assessor's Parcel No. (APN) 059-020-001 in Section 3, Township 17 South, Range 14 East, of the San Bernardino Baseline and Meridian, as depicted on the *Heber, CA* 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle (Figure 1-2). The proposed Project site currently consists of a residence, a geothermal pipeline, storage/laydown area, and alfalfa cultivation. The property is zoned as A2GU for agricultural use and is within the Heber geothermal unit and Imperial County Renewable Energy Overlay Zone. Surrounding land uses in the Project vicinity are dominated by agricultural cultivation with solar facilities, a construction/aggregates company, a land and cattle company, and geothermal well pads and pipelines present throughout the local vicinity.

The Project proposes to develop a 12-megawatt solar energy facility on APN 059-020-001 that would provide parasitic load to the existing Heber 1 Geothermal Energy Facility. The proposed solar energy facilities will be developed immediately south of the proposed Dogwood/Heber 2 parasitic solar fields and will be connected by a buried medium-voltage interconnection line to the existing Heber 1 Geothermal Facility. The proposed alignment of the interconnection line is approximately 2.3 miles in length and runs west from the proposed solar energy facility for 0.25 mile before turning north for a distance of 0.90 mile and then heading east for 1.15 miles to the existing Heber 1 Geothermal Energy Facility. The proposed interconnection line intersects portions of Sections 32 and 33, Township 16 South, Range 14 East, and Sections 3 and 4, Township 17 South, Range 14 East (Figure 1-2).

1.2 Project Personnel

Tiffany Clark, Ph.D., Register of Professional Archaeologists (RPA), Regional Principal Investigator at Chronicle Heritage, served as Principal Investigator and provided senior oversight, technical expertise, and was the primary author of the report. Scott Torres, M.A., Architectural Historian at Chronicle Heritage was responsible for overseeing the historic built-environment study and reporting effort with oversight from Carrie Chasteen, M.S. Associate Archaeologist Paige Kohler completed the record search of the South Coastal Information Center (SCIC). Marit Van Cant, with assistance from Mathias Cien-Mayer and Shakira Habib, completed the field surveys. Brian Spelts served as the GIS analyst. Finally, Carrie Chasteen, MA, RPA, conducted senior technical review of this report.



Figure 1-1. Project vicinity map.

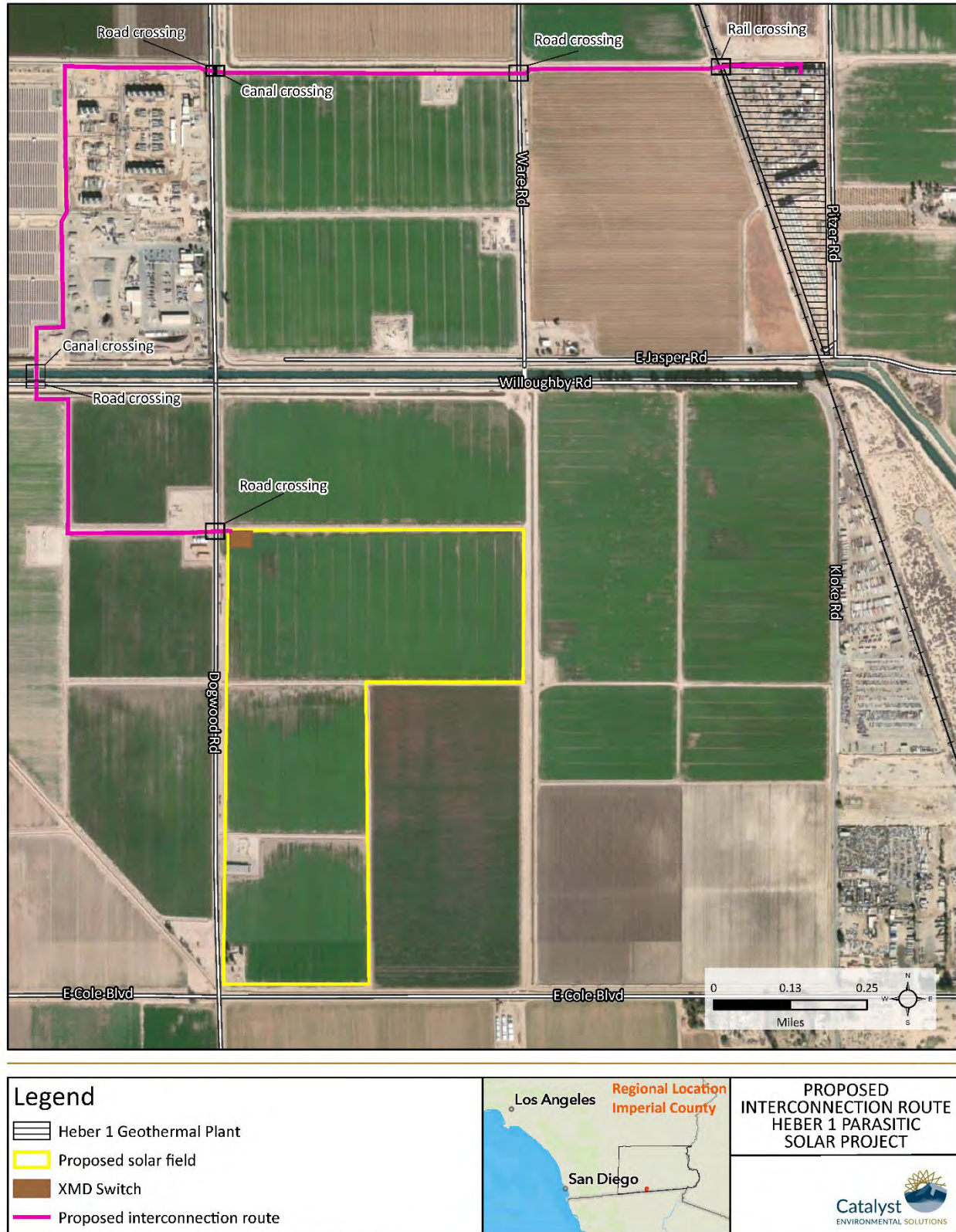


Figure 1-3. Map of Project elements.

1.3 Report Organization

This report documents the results of the cultural resource assessment conducted for the proposed Project. Chapter 1 has introduced the Project location and description. Chapter 2 states the regulatory context for the Project. Chapter 3 synthesizes the natural and cultural setting of the Project area and surrounding region. The results of the previous cultural investigations and the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) search are presented in Chapter 4. The field methods employed during this investigation and the findings are discussed in Chapter 5. An impact analysis and management recommendations are provided in Chapter 6. These are followed by bibliographic references and appendices.

2 Regulatory Context

This section includes a discussion of the applicable laws, ordinances, regulations, and standards governing cultural resources that may pertain to the proposed Project.

2.1 California Environmental Quality Act

The proposed Project is subject to compliance with CEQA, as amended. Compliance with CEQA statutes and guidelines requires both public and private projects with financing or approval from a public agency to assess the project's impact on cultural resources (Public Resources Code Sections 21082, 21083.2 and 21084 and California Code of Regulations 10564.5). The first step in the process is to identify cultural resources that may be impacted by the project and then determine whether the resources are "historically significant" resources.

CEQA defines historically significant resources as "resources listed or eligible for listing in the California Register of Historical Resources (CRHR)" (Public Resources Code Section 5024.1). A cultural resource may be considered historically significant if the resource is 45 years old or older and possesses integrity of location, design, setting, materials, workmanship, feeling, and association.¹ In addition, it must meet any of the following criteria for listing on the CRHR:

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 possesses high artistic values; or,
4. Has yielded, or may be likely to yield, information important in prehistory or history (Public Resources Code Section 5024.1).

Cultural resources are buildings, sites, humanly modified landscapes, traditional cultural properties, structures, or objects that may have historical, architectural, cultural, or scientific importance. A resource can also be determined historically significant under CEQA by virtue of being included in a local register of historical resources regardless of CRHR eligibility (see Title 14 California Code of Regulations Section 15064.5(a)(2)). CEQA states that if a project will have a significant impact on important cultural resources, deemed "historically significant," then project alternatives and mitigation measures must be considered. Additionally, the Office of Historic Preservation (OHP) may choose to comment on the CEQA compliance process for specific local government projects in an informal capacity but does not seek to review all projects that may affect historically significant cultural resources under CEQA provisions.

¹The Office of Historic Preservation (OHP) guidelines recognize a 45-year-old criteria threshold for documenting and evaluating cultural resources (assumes a 5-year lag between resource identification and the date that planning decisions are made)(OHP 1995:2). The age threshold is an operational guideline and not specific to CEQA statutory or regulatory codes.

2.2 Assembly Bill 52

Signed into law in September 2014, California Assembly Bill 52 (AB 52) created a new class of resources – tribal cultural resources – for consideration under CEQA. Tribal cultural resources may include sites, features, places, cultural landscapes, sacred places, or objects with cultural value to a California Native American tribe that are listed or determined to be eligible for listing in the CRHR, included in a local register of historical resources, or a resource determined by the lead CEQA agency, in its discretion and supported by substantial evidence, to be significant and eligible for listing on the CRHR. AB 52 requires that the lead CEQA agency consult with California Native American tribes that have requested consultation for projects that may affect tribal cultural resources. The lead CEQA agency shall begin consultation with participating Native American tribes prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report. Under AB 52, a project that has potential to cause a substantial adverse change to a tribal cultural resource constitutes a significant effect on the environment unless mitigation reduces such effects to a less than significant level.

2.3 Imperial County General Plan

2.3.1 Conservation and Open Space Element

The Conservation and Open Space Element of County's General Plan (County of Imperial 2016) contain one goal and one policy related to the protection and preservation of cultural resources. These include:

GOAL 3: Preserve the spiritual and cultural heritage of the diverse communities of Imperial County.

- **Objective 3.1:** Protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.
- **Objective 3.2:** Develop management strategies to preserve the memory of important historic periods, including Spanish, Mexican, and early American settlements of Imperial County.
- **Objective 3.3:** Engage all local Native American Tribes in the protection of tribal cultural resources, including prehistoric trails and burial sites.

Cultural Resources Conservation Policy:

Identify and document significant historic and prehistoric resources, and provide for the preservation of representative and worthy examples; and recognize the value of historic and prehistoric resources, and assess current and proposed land uses for impacts upon these resources.

Programs

- The County will use the CEQA process to conserve cultural resources and conform to Senate Bill 18 "Consultation with Tribal Governments" and Assembly Bill 52 "Consultation with Tribal Governments". Public awareness of cultural heritage will be stressed. All information and artifacts recovered in this process will be stored in an appropriate institution and made available for public exhibit and scientific review.

- Encourage the use of open space easements in the conservation of high value cultural resources.
-
- Consider measures which would provide incentives to report archeological discoveries immediately to the Imperial Valley Desert Museum.
- Coordinate with appropriate Federal, State, local and tribal agencies to provide regular updates to the "Sensitivity Map for Cultural Resources" (Figure 6).
- Discourage vandalism of cultural resources and excavation by persons other than qualified archaeologists. The County shall study the feasibility of implementing policies and enacting ordinances toward the protection of cultural resources such as can be found in California Penal Code, Title 14, Point 1, Section 622-1/2. The County should maintain confidentiality of specific resource locations to prevent vandalism and desecration of sensitive cultural resources.

2.3.2 Renewable Energy and Transmission Element

Because the Project site lies within the County's Renewable Energy Overlay Zone, the Renewable Energy and Transmission Element of the General Plan also applies (County of Imperial 2015). The element contains several goals and associated objectives that are relevant to cultural resources. These include:

GOAL 1: Support the safe and orderly development of renewable energy while providing for the protection of environmental resources.

- **Objective 1.1:** The County of Imperial supports the overall goals of the Desert Renewable Energy Conservation Plan to provide a balance between the development of renewable energy resources while preserving sensitive environmental resources within its jurisdiction.
- **Objective 1.2:** Lessen impacts of site and design production facilities on agricultural, natural, and cultural resources.
- **Objective 1.3:** Require the use of directional geothermal drilling and "islands" when technically advisable in irrigated agricultural soils and sensitive or unique biological areas.
- **Objective 1.4:** Analyze potential impacts on agricultural, natural, and cultural resources, as appropriate.
- **Objective 1.5:** Require appropriate mitigation and monitoring for environmental issues associated with developing renewable energy facilities.
- **Objective 1.6:** Encourage the efficient use of water resources required in the operation of renewable energy generation facilities.
- **Objective 1.7:** Assure that development of renewable energy facilities and transmission lines comply with Imperial County Air Pollution Control District's regulations and mitigation measures.

GOAL 2: Encourage development of electrical transmission lines along routes which minimize potential environmental effects.

- **Objective 2.1:** To the extent practicable, maximize utilization of IID's transmission capacity in existing easements or rights-of-way. Encourage the location of all major transmission lines within designated corridors, easements, and rights-of-way.
- **Objective 2.2:** Where practicable and cost-effective, design transmission lines to minimize impacts on agricultural, natural, and cultural resources, urban areas, military operation areas, and recreational activities.

GOAL 8: Develop overlay zones that will facilitate the development of renewable energy resources while preserving and protecting agricultural, natural, and cultural resources. Development of overlay zones shall include coordination with Federal, State, County, Tribal governments, educational entities, the public and local industries.

- **Objective 8.1:** Allow for County review with appropriate development and performance standards for development of local resources within the overlay zones.
- **Objective 8.2:** Promote the exchange of information concerning renewable energy development to be circulated between industry, County staff, and the public.
- **Objective 8.3:** Provide the public adequate opportunity to obtain information on the current status of renewable energy development and to provide input on matters related to the development of renewable energy resources.

3 Natural and Cultural Setting

This section of the report summarizes information regarding the physical and cultural setting of the Project area, including the prehistoric, ethnographic, and historic contexts of the region. Several factors, including topography, available water sources, and biological resources, affect the nature and distribution of prehistoric, ethnographic, and historic-period human activities in an area. This background provides a context for understanding the nature of the cultural resources that may be identified within the region. Much of the information provided in the following sections has been adapted from a report compiled by PaleoWest entitled *Cultural Resources Inventory for the Border Fuels Reduction Project, Imperial and San Diego Counties, California* (Tennyson et al. 2022).

3.1 Natural Setting

3.1.1 Physiography and Geology

The Project area is within the Colorado Desert of Imperial County, the largest and most arid subdivision of the Sonoran Desert and one of the hottest and most arid environments in the United States. The Project area is within the southern portion of a major physiographic and geologic feature of the Colorado Desert, the Salton Trough. The Salton Trough is an extensive topographic and structural depression extending from the Gulf of California about 130 miles northwest through the Coachella Valley to the summit of San Geronimo Pass. The Gulf of California is separated from the trough by the roughly 11-meter tall (36 foot tall) delta of the Colorado River, which slopes gradually down to the north to about 69 meters (226 feet) below mean sea level (bmsl) at the Salton Sea, then rises gradually through the Coachella Valley. This feature evolved during the late Cenozoic Era as a result of tectonic forces that continue to the present day to separate the Baja California peninsula from mainland Mexico. These forces are manifested by numerous fault systems (including the San Andreas Fault) that have resulted in a deepening of the rift that, through the millennia, has contained bodies of either freshwater or saltwater. Intrusions of seawater into the rift first occurred during the late Cenozoic Era, during the Miocene and Pliocene epochs. Elevations within the Project area range from 5 feet bmsl to 10 feet above mean sea level (amsl). Most of the Project area is currently under agriculture.

Subsequently, during the early Pleistocene epoch, a growing alluvial fan of the Colorado River delta sealed off the upper portion of the rift from the sea, creating the Salton Trough basin. The lower portion became what is today the Gulf of California. After this division of the rift, flood episodes of the Colorado River would occasionally divert into the Salton Trough basin long enough to temporarily fill it with fresh water, creating a large lake known historically as Lake Cahuilla. Often, after episodes of flooding, the river eventually returned to its regular channel, into the Gulf of California and the lake would then gradually empty by evaporation. This cycle occurred several times during the Pleistocene and subsequent Holocene epoch. Lake Cahuilla, when full or even nearly full, would have encompassed the smaller present-day Salton Sea and covered much of the Imperial Valley, creating an extensive (but temporary) lacustrine environment (Apple et al. 1997; Schaefer 2006; Waters 1983).

Geologically, a sequence of marine, nonmarine, and lacustrine-associated geologic, sedimentary formations that extend deep beneath the Salton Trough document the geologic history of the rift described above. The Split Mountain Formation, deposited in the rift during the late Miocene epoch, consists primarily of nonmarine sediments of terrestrial (alluvial and colluvial) origin. At the

beginning of the subsequent Pliocene epoch, marine sediments of the Imperial Formation began to be deposited atop the Split Mountain Formation, indicating the first marine transgressions into the rift depression (Dorsey et al. 2007). Later in the Pliocene, deposition of the nonmarine sediments contained in the Palm Springs and Canebrake Conglomerate formations indicate terrestrial contributions to the rift depression. Deposition of these latter two formations may have been at least partially contemporaneous with the deposition of the Imperial Formation marine sediments. Beginning possibly as early as the late Pliocene, the lacustrine sediments contained in the Borrego Formation indicate the end of marine deposition in the rift and the creation of the Salton Trough, and the presence in it of a freshwater lake. These sediments mostly overlie the Palm Spring and Canebrake Formations, but, in some instances, they appear to also interfinger with them, possibly indicating some contemporaneity with the deposition of these formations.

During the Pleistocene, deposition of the nonmarine Ocotillo Conglomerate Formation appears to have occurred contemporaneously with deposition of the lacustrine Brawley Formation. The contemporaneous deposition of these formations likely indicates that a Lake Cahuilla-like body of water was intermittently present in the Salton Trough basin during this period. These formations are subsequently overlain by Holocene-age lacustrine and alluvial deposits, indicating that these conditions continued throughout the period.

3.1.2 Climate and Hydrology

Conditions within the Colorado Desert are among the hottest found in the United States. Average daily temperatures typically range from the low 40 degrees Fahrenheit (°F) in winter to 105°F in summer, although summer temperatures can reach into the 120s°F (State Parks 1984). A high of 127°F was recorded at the Gold Rock Ranch station, approximately 15 miles northwest of Yuma. This region also experiences rapid heat loss at night, resulting in a wide daily temperature variance of approximately 30°F. Annual rainfall totals within the Colorado Desert are among the lowest in the Sonoran Desert, averaging less than 2 inches per year in the Salton Trough and between 2-4 inches along the Colorado River (Crosswhite and Crosswhite 1982), though recent summer monsoons have been known to produce more than the average yearly precipitation in a single rainfall event. Droughts of up to 60 days are not uncommon in this area, and the longest recorded drought lasted for more than three years, with documented rainfall of 0.01 inches (Jaeger 1957; Shreve and Wiggins 1964). Freshwater is found in the form of occasional springs and wells, and sporadically in the numerous seasonal drainages. It is thought that the climatic conditions at lower elevations of the Colorado Desert have remained much the same since the late Pleistocene.

The most significant hydrological feature in the vicinity of the Project area, given the criticality of water supply in the ecology, prehistory, and history of the Colorado Desert, is ancient Lake Cahuilla. Consequently, the implications of the periodic inundation of the Salton Trough will be described in more detail. As described previously, although it is generally accepted that freshwater inundations of the Salton Trough likely began during the Pleistocene epoch, it is documented that during the middle to Late Holocene epoch, Lake Cahuilla filled during natural episodes of Colorado River flooding, and then receded, several times before its last natural desiccation about 300 Before Present (B.P.) (Schaefer 1994, 2006; Waters 1983; Wilke 1978). During the Holocene, Lake Cahuilla formed in the Salton Trough when the Colorado River's major flood episodes breached a drainage divide near Cerro Prieto in northern Baja California. The resulting head-cutting diverted all or most of the Colorado River flow into the Salton Trough. Unchecked, the Colorado River flow would fill the trough to the 40-feet (12-meter) amsl contour, at which point an outflow channel was created. Flow into the trough presumably would have continued until siltation clogged the inflow channel. High evaporation rates would then cause the lake to recede and salinity to increase

proportionally. Stands of Lake Cahuilla at the 40-foot (12-meter) amsl contour were truly huge, covering 2,201 square miles and reaching a maximum depth of 315 feet. Higher shorelines have been reported and dated to the Pleistocene (Waters 1983); however, it is not clear that any of these were associated with freshwater lakes resulting from Colorado River diversions.

3.1.3 Flora and Fauna

Creosote bush scrub is the most widespread natural vegetation type in the Sonoran Desert, and it covers large expanses of the Colorado Desert. Other natural plant communities also present in the general area include mesquite woodland, desert ironwood woodland, palo verde woodland, four-wing saltbush scrub, creosote bush-burrow weed scrub, brittle bush scrub, ocotillo scrub, and desert buckwheat scrub. The creosote bush scrub community is dominated by creosote bush (*Larrea tridentata*) and salt bush (*Atriplex canescens*) and occurs where the soil is more alkaline. Small shrubs include mesquites (*Prosopis* sp.), burrobrush (*Hymenoclea salsola* var. *pentalepis*), desert ironwood (*Olneya tesota*), and desert broom (*Baccharis sarothroide*), with ocotillo sparsely present on alluvial fans (Shreve and Wiggins 1964). Larger drainages and washes support species of small trees and shrubs including western honey mesquite (*Prosopis glandulosa*), ironwood, and blue palo verde (*Cercidium floridum*), as well as species such as smoketree (*Psoralea arguta*) (Bureau of Land Management [BLM] 2011:9.1071). Many of the plants in these various communities, including salt bush, mesquite, cactus, and buckwheat, were of economic importance to Native American people who occupied the area (Bean 1972; Bean and Saubel 1972).

The Colorado Desert is inhabited by a variety of faunal species that are well adapted to the dry and arid environment. Mammals commonly found in this region include kit fox (*Vulpes macrotis*), desert cottontail (*Sylvilagus auduboni*), and black-tailed jackrabbit (*Lepus californicus*), and an array of rodents such as white-tailed antelope squirrel (*Ammospermophilus leucurus*), round-tailed ground squirrel (*Spermophilus tereticaudus*), desert and Merriam kangaroo rats (*Dipodomys merriami*), and desert pocket mouse (*Perognathus penicillatus*). Coyote (*Canis latrans*), desert bighorn sheep (*Ovis Canadensis nelson*), and Sonoran pronghorn antelope (*Antilocapra americana sonorensis*) are among the larger mammals. The most common bat species in this area is the California leaf-nosed bat (*Macrotus californicus*). This region is also populated by a variety of reptiles, such as the fringed-toed lizard (*Uma inornata*, *U. notata*), flat-tailed horned lizard (*Phrynosoma m'calli*), desert tortoise (*Gopherus cinctus*), chuckwalla (*Sauromalus obesus*), and desert iguana (*Dipsosaurus dorsalis*). Snake species that thrive in the Colorado Desert including the banded sandsnake (*Chilomeniscus cinctus*), sidewinder (*Crotalus cerastes*), and rosy boa (*Lichanura trivirgata gracia*).

3.2 Cultural Setting

3.2.1 Ethnography

Schaefer (2006:21) has previously indicated that the location of the Project area is in a boundary area of the traditional territories of two tribal groups, the Yuman-speaking Tipai (Kamia) to the south and the Shoshonean-speaking Cahuilla to the north (Schaefer 2006:21). Schaefer's use of the term "Tipai" has evolved in the literature, through time, as the one applicable to the people living in the area of eastern San Diego and Imperial counties.

The general early term applied for the Yuman-speakers in the area was "Diegueño," from the mission with which they came to be associated, the San Diego Mission de Alcalá. This term was later adopted by anthropologists (e.g., Kroeber 1925) and further divided into the southern and

northern Diegueño. Subsequently, Shippek (1982) initiated the use of a Yuman language term, "Kumeyaay," for the people formerly designated as the Diegueño. According to Carrico (1998:V-3):

"The linguistic and language boundaries as seen by Shippek (1982) subsume the Yuman speakers into a single nomenclature, the Kumeyaay, a name applied previously to the mountain Tipai or Southern Diegueño by Lee (1937), while Almstedt (1974:1) noted that 'Ipai applied to the Northern Diegueño with Tipai and Kumeyaay for the Southern Diegueño. However, Luomala (1978:592) has suggested that while these groups consisted of over 30 patrilineal clans, no singular tribal name was used and she referred to the Yuman-speaking people as 'Ipai/Tipai..."

Other researchers designated the Kumeyaay living north of the San Diego River as 'Ipai (Northern Diegueño) and those living south of the river and into Baja California as Tipai (Southern Diegueño) (Hedges 1975:71-83; Langdon 1975:64-70). Gifford (1931) designated the Kumeyaay living in the eastern San Diego and Imperial counties as the Kamia, who were distinguished by a desert orientation, with contacts and travel most frequently between eastern San Diego County and the Imperial Valley. This term has generally been replaced with the designation of eastern Kumeyaay or Tipai (Gifford 1931:2; Hedges 1975; Langdon 1975; Luomala 1978). Recently, however, Schaefer (2006:25) stated that:

"The Kamia specifically were also directly related to the Tipai (southern Kumeyaay) of the mountains and coastal areas of San Diego County and northern Baja California. Their dialect, however, is closely related to the Cocopah and other delta Yumans."

According to Schaefer (2006:21), the Tipai (Kamia) and the Cahuilla "consider the cultural resources of the general area as part of their cultural and historical legacy." As such, both groups are described herein.

3.2.2 Prehistory

Schaefer (1994) was the first to develop a chronological sequence for the Colorado Desert area. The sequence he proposed strongly resembles the scheme in use for the San Diego region, while also incorporating archaeological information from the contiguous Mojave Desert region to the north. Schaefer's reliance on these two adjacent areas is in large part due to the well-defined cultural histories that have been developed for the Mojave Desert and San Diego regions. In contrast to these two areas, the basic culture history of the Colorado Desert region has not changed dramatically since pioneering archaeologist Malcolm Rogers (1939, 1945, 1966) published his initial impressions of the desert's chronology and cultural development, which it should be noted, also encompassed the San Diego region. Consequently, understanding the early prehistory of the Colorado Desert region still relies heavily on comparisons with, and information derived from, both the San Diego region and the Mojave Desert areas.

Paleoindian Period (ca. 12,000 to 10,000 B.P.)

The earliest well-documented prehistoric sites in Southern California belong to the Paleoindian Period (circa [ca.] 12,000-10,000 B.P.) during the Late Pleistocene. In the western United States, most evidence for the presence of Paleoindian peoples derives from finds of large-fluted spear and projectile points (Fluted-Point Tradition) found at sites associated with big game hunting. Paleoindian sites have been documented in places such as Clovis and Folsom in the Great Basin and the northern Desert Southwest area including the Mojave Desert (Moratto 1984:79-88). In the Mojave Desert, while absolute dating remains elusive, the Paleoindian Period is assumed to span

approximately 12,000 to 10,000 B.P. (Sutton et al. 2007:234–236). Elsewhere in California, most of the evidence for the Fluted-Point Tradition derives principally from isolated occurrences of fluted points that have been found scattered across the state (Dillon 2002; Rondeau et al. 2007). Only isolated occurrences of fluted points have been observed in the Colorado Desert (e.g., Davis et al. 1980:150; Kline 2014) and in the San Diego area in mountains of southern San Diego County (Kline and Kline 2007). Some finds have also been made to the south in Baja California (Des Lauriers 2008; Hyland and Gutierrez 1995).

The beginning of the San Dieguito Tradition or Complex, which is associated with artifact assemblages distinct from that of the Fluted Point Tradition, is also assumed to date to the Paleoindian Period. In California (Alta California), this tradition has been documented mostly in the coastal area of San Diego County (Carrico et al. 1993; Rogers 1966; Warren 1966, 1967; Warren and True 1961); and to a lesser degree in the Mojave Desert (Sutton et al. 2007) and Colorado Desert (Rogers 1939, 1966; Schaefer 1994; Warren 1967). In the Mojave Desert, Sutton et al. (2007:236) assign the San Dieguito Complex to the early Archaic Period during the Early Holocene. Warren dates the San Dieguito Tradition as beginning circa 10,000 B.P. and ending sometime between 8500 and 7200 B.P. (Warren 1967, 1968:4; Warren and Ore 2011; Warren et al. 1998). It is characterized by an artifact inventory consisting almost entirely of flaked stone biface and scraping tools, but lacking the distinctive fluted points associated with the Fluted-Point Tradition. The subsistence system or emphasis of the San Dieguito Tradition, while not yet entirely agreed upon, appears to have been oriented towards hunting rather than gathering, based on the predominance of primarily hunting-associated tools in recovered artifact assemblages (Warren 1967, 1968).

Evidence for the Fluted-Point Tradition in the general vicinity of the Project area is minimal with only two isolated flute points have been identified in the Colorado Desert (Davis et al. 1980; Kline 2014) with a third point found in the mountains of San Diego County (Kline and Kline 2007). In contrast, the San Dieguito Tradition is relatively well-documented in the San Diego area. The most substantial evidence for this tradition derives from a stratified archaeological site, the C.W. Harris Site (CA-SDI-149/316/4935B), in western San Diego County along the San Dieguito River. The Harris Site formed the original basis upon which the San Dieguito Tradition was defined (Rogers 1939, 1966; Vaughan 1982; Warren 1966, 1967, 1968; Warren and True 1961). Diagnostic artifact types and categories associated with the San Dieguito Tradition include elongated bifacial knives, scraping tools, crescentics, and Silver Lake and leaf-shaped projectile points (Carrico et al. 1993; Knell and Becker 2017; Rogers 1966; Vaughan 1982; Warren 1966, 1967; Warren and Ore 2011; Warren and True 1961). The C.W. Harris Site also provided the oldest calibrated radiocarbon date (9968 B.P.) found in association with a subsurface San Dieguito artifact assemblage (Warren and Ore 2011; Warren et al. 1998). Another slightly younger calibrated radiocarbon date of 9130 B.P. was also acquired from a San Dieguito-associated subsurface stratum at site CA-SDI-316 (Cooley 2013). Finally, possible evidence for the San Dieguito Tradition has been discovered at a site in the southern mountains of San Diego County; the site assemblage included complete, elongated bifacial knives and/or projectile points that bear a strong resemblance to some of those recovered from the C.W. Harris Site (Pignoli 2005).

Although Rogers (1939, 1966) has described occurrences of sites and artifacts attributable to the San Dieguito Complex in the Mojave and Colorado Desert areas, the ability to accurately determine the antiquity of these artifacts and sites by radiometric dating methods has proven to be problematic (Schaefer and Laylander 2007:247; Sutton et al. 2007:237; Warren 1967:179). Consequently, the radiometric dating of the artifacts and their context at the C.W. Harris Site has for several decades, been the principal means of ascertaining the antiquity of these similar desert assemblages (Warren 1967). In the Mojave Desert area, the San Dieguito Complex has been largely

subsumed under the Lake Mojave Complex (Sutton et al. 2007:236). Recently, calibrated radiocarbon dates from several Lake Mojave Complex associated sites have produced dates of similar antiquity to those from the C.W. Harris Site (Sutton et al. 2007:235) (i.e., ca. 10,000–9000 B.P.). In the Mojave Desert area, these Lake Mojave Complex sites are frequently associated with glacial lakes that were still present at the end of the Pleistocene and the beginning of the Holocene. Such glacial-related lacustrine features were generally not present in the more southerly Colorado Desert area. However, given the discovery of Paleoindian Period and/or Lake Mojave Complex associated projectile points in the Salton Basin (Apple et al. 1997; Wahoff 1999), it is possible that this basin, too, may have been inundated, at least periodically, during this earlier period.

Archaic Period (10,000 to 1500 B.P.)

The Archaic Period (ca. 10,000–1500 B.P.) encompasses the interval between the relatively cool/wet conditions of the early Holocene and the appearance of assemblages characteristic of the Late Prehistoric. The Archaic Period is generally differentiated from the earlier Paleoindian Period by a shift from hunting-focused subsistence systems to a more generalized economy with an increased focus on gathering and the use of grinding tools and seed-processing technology. Consequently, typical artifact assemblages in the Mojave Desert—where sites dating to the early Archaic Period are common—contain dart points, but with increasing quantities of ground stone tools (such as manos and metates) occurring into the middle and latter parts of the period. As with the Paleoindian Period, little archaeological evidence has yet been encountered in the Colorado Desert area that can be definitely attributed to the early part of the Archaic Period (i.e., from ca. 8500–4000 B.P.) (Schaefer 1994:64; Schaefer and Laylander 2007:247). Although evidence of early Archaic occupation in the Colorado Desert has long been minimal—as noted above for the Paleoindian Period—possible evidence is the discovery of Paleoindian Period and/or Lake Mojave Complex associated projectile points in the Salton Basin (Apple et al. 1997; Wahoff 1999) and at site CA-SDI-7074 in the mountains of southeastern San Diego County (Williams 2014), could change this paucity of evidence.

A possible early Archaic discovery in the Salton Basin occurred during an archaeological investigation at the Salton Sea Test Base (Apple et al. 1997; Wahoff 1999). This discovery consisted of an assemblage of large projectile points that were stylistically associated with early Archaic-style projectile points in the Mojave Desert, including Pinto and Elko styles. Although archaeological investigations did not obtain any radiocarbon dates to verify the relative dating evidence, the styles of these points appear to be associated with the early Archaic Period. More recently, excavations at site CA-SDI-7074, in the eastern foothills of the Laguna Mountains, uncovered more than 100 subsurface thermal features, many of which were likely earth ovens associated with agave roasting activity (Williams 2014). Although radiocarbon dating indicated that most of these oven features dated to the Late Prehistoric Period, five of the more deeply buried features were discovered to date between 9600 and 8590 B.P. These results not only indicate the use of agave as a food resource much earlier in time than was previously realized, but also suggest a reappraisal of the dating for the inception of the early Archaic Period in the area (Williams 2014:325). Additional evidence for an early to mid-Archaic Period use at the site includes the recovery of a single Elko-style projectile point (Williams 2014:151).

Limited evidence has been found for late Archaic (beginning ca. 4000 B.P.) occupation in the western Colorado Desert. One of the few studies that have documented use during this time was completed by Love and Dahdul (2002) in the northern Coachella Valley of the Salton Basin. The contexts of several sites in the Coachella Valley, some possibly associated with ancient stands of

Lake Cahuilla, were radiocarbon dated to circa 3000-2000 B.P. (Love and Dahdul 2002; Schaefer and Laylander 2007:249). Other evidence for the late Archaic use in the area includes deposits found at the Indian Hill Rockshelter (CA-SDI-2537) in Anza-Borrego Desert State Park (McDonald 1992) and at another rock shelter in Tahquitz Canyon, near Palm Springs (Bean et al. 1995; Schaefer and Laylander 2007:247). The Indian Hill Rockshelter, until recently, was the oldest radiocarbon-dated archaeological site in the area. The site contained distinctive dart-sized projectile points, ground stone implements, rock-lined caches, and inhumations, one of which was radiocarbon dated to 4070 \pm 100 years B.P. (McDonald 1992; Schaefer 1994; Wilke and McDonald 1989). The rock shelter in Tahquitz Canyon, although lacking radiocarbon dates, exhibited an assemblage similar to that found in the Indian Hill Rockshelter (Bean et al. 1995; Schaefer and Laylander 2007:247).

Evidence for settlement patterning during the Archaic Period in the Colorado Desert area is minimal. However, some of the late Archaic sites in the Coachella Valley appear to have been in contexts associated with intermittent ancient stands of Lake Cahuilla (Love and Dahdul 2002). It seems likely, therefore, that this hydrological feature had a significant influence on settlement patterns in the western Colorado Desert during at least the late Archaic. Evidence of Archaic habitation at the Indian Hill and Tahquitz Canyon rockshelter sites indicate that adjacent mountain areas were also used by prehistoric groups during the middle to late Archaic.

Late Prehistoric Period (1500 to 300 B.P.)

The Late Prehistoric and Protohistoric periods are represented in this region by the Patayan Complex. These periods date from approximately 1500 B.P. until the American expansion into the area at the turn of the nineteenth century. The Protohistoric Period encompasses a protracted 300-year-long period of sporadic European exploration and colonization that had little effect on aboriginal lifeways in the Southern California deserts.

Compared to those shifts noted for the middle and late Archaic Period, the changes occurring at the onset of the Late Prehistoric Period were rather abrupt. The magnitude of these changes and the short period of time within which they took place seem to indicate a significant alteration in subsistence practices ca. 1500-1300 B.P. The changes observed in the archaeological record in the San Diego area during the Late Prehistoric Period include: a shift in settlement patterning indicative of population increases; a shift from hunting using the atlatl and dart to using the bow and arrow; a reduced emphasis on shellfish gathering along some areas of the coast (possibly as a result of silting-in of the coastal lagoons); the introduction and production of pottery; an increase in storage of principal foodstuffs, such as mesquite, acorns, and piñon nuts; a shift in burial practices from inhumation to cremation; and, along the Colorado River, a change in economic and settlement patterns that involved subsistence expansion and the adoption of floodplain horticulture (Gallegos 2002; McDonald and Eighmey 1998; Schaefer 1994).

In the Coachella Valley and Salton Basin area, the Late Prehistoric Period is associated with the periodic infilling and emptying of Lake Cahuilla. This substantial hydrological feature is seen as recurrently altering the course of human settlement in the area during the period (Schaefer and Laylander 2007:250-251). During times of lake absence, settlement appears to have been characterized by the occupation of semi-sedentary villages along major water courses and around springs with adjacent montane areas seasonally occupied to exploit mesquite, acorns, and piñon nuts. Tahquitz Canyon in the mountainous area west of the Salton Basin has been documented as having been an important population center during the Late Prehistoric Period (Bean et al. 1995).

Schiffer and McGuire (1982:216-222) and Waters (1982a) used a chronology originally proposed by Rogers (1945) to divide the Late Prehistoric Period in the Colorado Desert area based on the

progression or changes in development of ceramic types. Referring to the period as “Patayan” (instead of the term “Yuman,” used by Rogers), three phases were defined that were correlated with fillings and desiccations of Lake Cahuilla. These phases include:

- **Patayan I** begins at approximately 1200 B.P. with the introduction of pottery into the Colorado Desert. Sites dating to this phase appear to be limited mostly to the Colorado River area.
- **Patayan II** coincides with an infilling of Lake Cahuilla around 950 B.P. As described previously, the lake covered much of the Imperial Valley and created an extensive lacustrine environment that is thought likely to have attracted people from the Colorado River area. New pottery types appear at this time as a result of local production along the lakeshore and technological changes in the Colorado River area. Subsequently, Lake Cahuilla experienced several fill/recession episodes before its final desiccation.
- **Patayan III** begins around 500 B.P. as the lake receded. Colorado Buff ware became the predominant pottery type during this time period across the Colorado Desert and along the Colorado River. Several Patayan II pottery types continue into the Patayan III (Waters 1982a, 1982b).

This chronological scheme has served as a useful tool for organizing archaeological assemblages in the area. However, Schaefer and Laylander (2007:252–253) noted that data obtained from more recent archaeological investigations highlight some serious discrepancies with its use (e.g., Hildebrand 2003).

As previously noted, the beginning of the Late Prehistoric Period in the San Diego County area is marked by the appearance of several new tool technologies and subsistence shifts in the archaeological record. Movements of people during the last two millennia can account for at least some of these changes. Yuman-speaking people have occupied the Gila and Colorado river drainages of what is now western Arizona at least 2000 years ago (Moriarty 1968); over time, these groups appear to have migrate westward through the Colorado Desert and the mountains of the Peninsular Ranges to the coast. An analysis by Moriarty (1966, 1967) of materials recovered from the Spindrift Site in La Jolla indicated a preceramic Yuman phase. Based on his analysis and a limited number of radiocarbon samples, Moriarty concluded that Yumans, lacking ceramic technology, migrated and occupied what is now the San Diego coastline circa 2000 B.P. Subsequently, by approximately 1200–1300 B.P., ceramic technology diffused into the coastal area from the eastern deserts. Although these Yuman speakers may have shared cultural traits with the people occupying what is now eastern San Diego County before 2000 B.P., their influence is better documented throughout present-day San Diego County after 1300 B.P. with the introduction of small points, ceramics, Obsidian Butte obsidian from the Salton Basin, and the practice of cremation of the dead.

Two distinct archaeological complexes have been proposed for the Late Prehistoric Period in what is now San Diego County. The Cuyamaca Complex is based on analysis by True (1970) of archaeological excavations undertaken in the Cuyamaca Rancho State Park and analysis of archaeological collections at the San Diego Museum of Man. Results of his analysis, True (1970) was able to define a Late Prehistoric Period Complex for southern San Diego County. This complex differs from the San Luis Rey Complex, which Meighan (1954) identified in the northern portion of the county. The two complexes are primarily differentiated by the presence or absence, or differences in the relative occurrence, of certain diagnostic artifacts in site assemblages. For example, Cuyamaca Complex sites generally contain both Cottonwood Triangular-style and Desert

Side-notched arrow points, while Desert Side-notched points are quite rare or absent in San Luis Rey Complex sites (Pignuolo 2001). Other examples include use of Obsidian Butte obsidian, which is far more common in Cuyamaca Complex sites than in San Luis Rey Complex sites and ceramics. While ceramics are present during the Late Prehistoric Period throughout the region, pottery occurs earlier in time and appears to be somewhat more specialized in form at Cuyamaca Complex sites. Burial practices at Cuyamaca Complex sites are almost exclusively cremations, often in special burial urns for interment. In contrast, archaeological evidence from San Luis Rey Complex sites indicates use of both inhumation and cremation. Based on ethnographic data, it is now generally accepted that the Cuyamaca Complex is associated with the Yuman Diegueño/Kumeyaay and the San Luis Rey Complex with the Shoshonean Luiseño/Juaneño.

Compared to Archaic Period sites, Late Prehistoric Period sites attributable to the San Luis Rey or Cuyamaca complexes, while not absent, are less common in the near-coastal areas of the county. As noted by Gallegos (1995:200):

“for San Diego County, there is temporal patterning, as the earliest sites are situated in coastal valleys and around coastal lagoons. Late Prehistoric Period sites are also found in coastal settings but are more common along river valleys and interior locations.”

In contrast, numerous Late Prehistoric Period sites, attributable to the San Luis Rey or Cuyamaca complexes, have been identified in the inland foothill areas of the region (e.g., Carrico and Cooley 2005; Chace and Hightower 1979; Cooley and Barrie 2004; McCown 1945; McDonald et al. 1993; Raven-Jennings and Smith 1999; Willey and Dolan 2004).

Lake Cahuilla and Obsidian Butte

Wilke (1978:90-93) initially posited three lacustrine intervals in the Salton Trough representing an unknown number of stands of Lake Cahuilla during the past 2,100 years. Waters (1983) subsequently refined Wilke's original estimates of the lacustrine intervals and suggested that there had been four lacustrine intervals that reached the 12-m amsl shoreline during the last 1,500 years (Waters 1983:382-385). The results of additional archaeological research suggest that a fifth, more recent lacustrine interval of Lake Cahuilla occurred sometime between the Spanish explorations of the region in A.D. 1540 and 1775. Radiocarbon dating indicates that this high stand probably occurred between approximately A.D. 1685 and 1740 (Cleland 1999:13).

The Lake Cahuilla chronology, in calendar years before present (cal B.P.; before A.D. 1950), corrected for variations in radiocarbon, is as follows:

- **Lacustrine Interval 5:** 330-270 cal B.P.;
- **Lacustrine Interval 4:** 520-370 cal B.P.;
- **Lacustrine Interval 3:** 740-580 cal B.P.;
- **Lacustrine Interval 2:** 1010-740 cal B.P.;
- **Lacustrine Interval 1:** 1250-1010 cal B.P.

It should be noted that the dates for the duration of the lake high stands represent maximum spans. The stratigraphic record reveals that the next oldest lacustrine intervals are associated with radiocarbon assays from two distinct sedimentary strata dating to approximately 2285 and 2300 cal B.P. Stratigraphic evidence indicates that there were no episodes of filling of Lake Cahuilla between about 2300 and 1250 cal B.P. (Waters 1983).

Each interval of filling the empty basin or evaporating all the impounded water likely occurred over several decades. As such, it is likely that during much of the past 2,300 years, the lake was neither full nor empty, but rather rising or falling between 84.8 meters bmsl and 12-meters amsl. A salient implication of this vertical dynamism is that the areal extent of Lake Cahuilla was highly variable over time. Native American settlement likely have shifted as the shoreline advanced or retreated. This variability in lake elevations is also important for determining when volcanic glass was available from the Obsidian Butte source. In late prehistoric times, especially after 950 B.P., toolstone from Obsidian Butte was widely used in Southern California. However, the source was inundated at its glass inaccessible whenever Lake Cahuilla's surface elevation was higher than 40 meters bmsl (Schaefer and Laylander 2007). Expanding or receding, the lake would have prevented access to Obsidian Butte glass whenever the water level stood between 40 meters bmsl and 12 meters amsl. Ethnographic testimony attests to the

importance of Obsidian Butte as a primary source of volcanic glass and a place of special importance to many local native populations persists to this day (Gates and Crawford 2010).

3.2.3 Cahuilla

The Cahuilla are a subgroup of the Takic family of the Uto-Aztecan stock and are therefore closely related linguistically to other "Shoshonean" speaking groups including the Gabrielino, Luiseño, and Serrano. These Takic-speaking groups are thought to represent a migration into the area occurring approximately 1500 B.P. (Schaefer 2006:21). According to Schaefer (2006:22):

What role these Takic speakers had in the development of the Patayan pattern in the Colorado Desert remains unclear, although it may have been considerable. The ancestors of the Colorado River Yumans are most often identified as the source of ceramics, cremation practices, agriculture, some architectural forms, and some stylistic and symbolic representations. The Takic migrations may coincide with the introduction of bow-and-arrow technology, but no direct association can be made. They may have contributed specific hunter and gatherer techniques as well as cosmological and symbolic elements to the Patayan cultural system.

The diversity of Cahuilla territory reflects the range of environmental habitats in inland Southern California. Topographically, their territory ranged from the summit of the San Bernardino Mountains to the Coachella Valley and Salton Sink. Ecological habitats included the full range of mountains, valleys, passes, foothills, and desert areas. Villages were typically situated in canyons or on alluvial fans near water and food resources, and a village's lineage owned the immediately surrounding land (Bean 1972). Well-developed trails were used for hunting and travel between settlements. Village houses ranged from brush shelters to huts 15–20 foot long. Important plant foods exploited from the Cahuilla's diverse habitat included mesquite and screw beans, piñon nuts, and various cacti. Other important plant foods included acorns, various seeds, wild fruits and berries, tubers, roots, and greens. Women were instrumental in the collection and preparation of vegetal foods.

Cahuilla settlement and subsistence patterns were impacted by fill and recession episodes of Lake Cahuilla. When the lake was present, the desert area becoming a more productive resource area. Schaefer (2006:22) states that "Cahuilla mythology and oral tradition also indicate that when Lake Cahuilla dried up, it was the mountain people who resettled the desert floor. The time of Lake Cahuilla is also best documented in the oral traditions of the Cahuilla, both with regard to settlement patterns, song cycles, and the effects of Lake Cahuilla on patrilineal clan

segmentation.” According to Strong (1929:36) “The derivation of the term Cahuilla is obscure, and it is regarded by the Indians to be of Spanish origin.”

The earliest Spanish contact with the Cahuilla may have been with the Juan Bautista de Anza expedition trips in 1774 and 1777. The route followed San Felipe Creek adjacent to Carrizo Creek and then through Borrego Springs, up into the San Jacinto Mountains (Pourade 1962:164; Schaefer 2006:23). The impact of the Spanish mission system and colonization was much less immediate and profound among the Cahuilla compared to Native American groups residing along the coast. It was not until 1819, after the establishment of the San Bernardino estancia and cattle ranch at San Gorgonio, that a more direct Spanish influence was felt. By 1823, members of the Romero Expedition documented that the Cahuilla at Toro were growing corn and melons and were already familiar with the use of horse and cattle, indicating a familiarity with Hispanic practices (Bean and Mason 1962).

During the Spanish Period and into the Mexican Period, political leadership became more centralized as Juan Antonio from the Mountain Cahuilla and Chief Cabazon in the desert emerged as central figures (Strong 1929). Juan Antonio’s group played a significant role during the Mexican American War, siding with the Mexicans against the Luiseño who supported the American invasion (Phillips 1975). Along with the rise of powerful chiefs and political restructuring, Mexican language, clothing, and food were incorporated into traditional culture during this era.

With the 1848 signing of the Treaty of Guadalupe Hidalgo, the U.S. Government promised to preserve the liberty and property of the inhabitants of California. In 1952, a treaty was drafted to settle land rights issues for the Cahuilla (as well as Serrano and Luiseño). The treaty was never ratified by Congress and the best farming and grazing lands were claimed by Euro-American settlers. In addition, Executive Orders enacted in the 1960s and 1970s resulted in the establishment of reservations that substantially reduced Cahuilla land. The result of these orders created a checkerboard of 48 sections of reservation lands spread across the eastern edge of the Santa Rosa and San Jacinto mountains and the Coachella Valley (Cultural Systems Research, Inc. [CSRI] 1983). Although various modifications have occurred over time, this has remained the permanent home of the Cahuilla to date.

3.2.4 Tpai-lipai (Kamai)/Kumeyaay

The Tpai-lipai/Kumeyaay were also hunter-gatherers who seasonally altered between the mountainous western portions of their territories and the eastern desert areas to maximize resource exploitation. Similar to the Cahuilla, the lifeways of the Tpai-lipai/Kumeyaay were impacted by the fill and recession of Lake Cahuilla. Schaefer (2006:26) states that “Lake Cahuilla figures prominently in the Kamia’s origin myth (Gifford 1931:75–83) and except for the Cahuilla, represents the only other major recorded oral tradition regarding the ancient lake.” The Tpai/Kamia were closely connected to the Quechan on the Colorado River and served as trading partners between the coastal and desert groups, using a travel route through the Mountain Springs Grade. These trading partners also were frequently politically allied against other groups to the north and south (Cook et al. 1997:9). The earliest Spanish contact may have been in 1785 by Pedro Fagés or during the Anza expedition journeys in 1774 and 1777 (Cook et al. 1997; Schaefer 2006). By this time, the Tpai-lipai/Kumeyaay were hostile to the Spaniards and were in alliance with other groups, actively resisting Spanish rule in the area. In 1775, this resistance culminated in open revolt when tribal members from at least 14 local villages banded together and attacked, and burned, the Mission San Diego de Alcalá (Carrico 2008:32–33). The Tpai-lipai/Kumeyaay continued to resist European and Anglo rule through the Mexican Period and into the American Period.

Although Mexico's governance of Alta California did not last long, it did help to cement the changes brought by the Spanish missionization and colonization of the area. One major alteration occurred in 1835 when the missions were secularized, and their large land holdings were made available to private citizens. Although some large grants of land were made prior to 1834, secularization of the mission's large grazing holdings ushered in the Rancho Era.

One impact was the dissolution of the mission as a residential and labor center for territorially disenfranchised Native Americans. Many mission neophytes had little option but to work on the new Mexican ranchos. Communities living farther from the ranchos were able to maintain their traditional lifeways for a bit longer. New ranches put new pressures on California's native populations, as grants were made in inland areas still occupied by the Kumeyaay, forcing them to acculturate or relocate farther into the backcountry. In rare instances, former mission neophytes were able to organize pueblos and attempt to live within the new confines of Mexican governance and culture. The most successful of these pueblos was the Pueblo of San Pasqual, located inland along the San Dieguito River Valley, founded by Kumeyaay who were no longer able to live at the Mission San Diego de Alcalá (Carrico 2008; Farris 1994).

During the American Period, railway systems began to connect the people and products of Southern California to the rest of the United States. Increased American settlement and claims on the land for residential, mining, agricultural, and ranching purposes in the second half of the nineteenth century meant that many remaining lands sustaining Native American populations were marked, surveyed, or even fenced as private, again changing the landscape of what are now San Diego and Imperial counties. Native American reservations were established, ostensibly to provide land for Native American populations, but these holdings made available only the poorest of subsistence lands and forced many indigenous peoples to adopt a more sedentary lifestyle, reliant on the Anglo economic system as an alternative to moving to reservations (Carrico 2008).

3.2.5 Quechan

According to Quechan oral tradition, their territorial range extended along the Colorado River from Blythe in the north to Mexico in the south. At the time of sustained European contact in the seventeenth century, the Quechan people numbered in the thousands. The largest concentration of Quechan traditionally lived at the confluence of the Colorado and Gila rivers, although they were strangely not reported in that area in 1540, when the Alacon and Diaz expeditions reached the confluence (Forbes 1965; Forde 1931). Nevertheless, in the following century, large Quechan villages existed in the area.

The Quechan economy was based on a combination of horticulture, fishing, and gathering. During the winter and spring, Quechan groups lived in seasonal village settlements located on terraces above the river floodplain. After the spring floods receded, small family groups dispersed to their agricultural plots along the river to plant crops. After the harvest in the fall, the Quechan gathered again in the large villages on the terraces, where stored agricultural foods, fishing, and limited gathering allowed them to live together through the winter (Bee 1983; Forde 1931). In all times but high flood, fishing in the Colorado River provided an important source of protein.

Numerous named villages were located along the terraces above the lower Colorado River flood zone. The village known as *Avi Kwotapai* was located on the west side of the Colorado River between Blythe and the Palo Verde Valley, and *Xenu mala vax* was on the east side of the river near present-day Ehrenberg (Bee 1983). Quechan and other Yuman-speaking groups report well-traveled trails that extend along the Colorado River, as well as trail networks between peaks and other significant landscape features (see discussions in Cleland and Apple 2003). Primary

ethnographic sources for the Quechan include Bee (1983), Castetter and Bell (1951), and Forde (1931).

The contemporary Quechan community is concentrated in the lands of the Fort Yuma-Quechan Reservation and has its main headquarters in Fort Yuma, Arizona. The reservation is approximately 45,000 acres and is located along the lower Colorado River in both Arizona and California just north of the United States/Mexico border.

3.3 History

The history of the region is generally divided into Spanish (1769–1821), Mexican (1821–1846), and American (1846–present) periods. The Spanish Period is marked by the establishment of a mission and presidio on a hill overlooking San Diego Bay in July 1769. The Spaniards introduced European crops, cattle, and other livestock. The Mexican Period began in 1821 when Mexico achieved independence from Spain. During the 1820s, a small village began to form at the base of Presidio Hill that became the Pueblo of San Diego (present-day Old Town). The town served as a market center and port for numerous ranchos in the region that were chiefly employed in cattle raising for the exportation of hides and tallow. In 1846, San Diego was occupied by American troops and officially became part of the United States when the Treaty of Guadalupe Hidalgo formalized the transfer of territory from Mexico to the United States in 1848.

European contact with coastal southern California began as early as 1542, with the voyage of Juan Rodríguez Cabrillo. However, intensive interactions and contacts with interior areas only came after the establishment of the Spanish presidio and mission of San Diego in 1769. During the Spanish Period, exploratory probes into eastern San Diego County were made by Pedro Fagés and others, and the southern immigrant trail came into use by colonists from Sonora. Mission culture may have begun to impact Native culture residing in the vicinity of the Project area.

In the 1800s, most travel from Arizona to San Francisco by Mexican soldiers, and later by American settlers, followed Anza's route. While the historic activity in the area during the early nineteenth century was limited primarily to travel with little settlement or resource exploitation, more intensive activity began in the 1820s, with the onset of limited placer mining in the eastern Colorado Desert. Early Spanish prospectors named the Cargo Muchacho ("loaded boy") Mountains after the gold they found there.

Mexico obtained independence from Spain in 1821. Soon thereafter, California's administrators began to shift their focus away from the Franciscan mission system and toward Hispanic lay settlement of the province. Avenues for foreign trade were opened, and private land grants became more numerous and extended farther inland from the coast.

During the Mexican American War of 1846–1848, California was occupied and subsequently annexed by the United States (U.S.). From the 1840s through the 1880s, the U.S. Cavalry established a series of camps and forts throughout Arizona, Nevada, and the California desert to protect settlers and immigrants from hostile tribes (Rice et al. 1996). Land ownership was complicated by this transition. The Treaty of Guadalupe-Hidalgo, signed in February 1848, obligated the U.S. Government to recognize legitimate land claims in Alta California. While Mexicans initially made up most of the population, the Gold Rush after 1849 stimulated large-scale immigration into the region. Despite large land holdings and a strong cattle industry, many Mexican landowners found themselves overextended when the northern California miners' demand for meat dwindled. To pay their taxes and bills, some were forced to offer up their lands at public auction (Garcia 1975:22). Small farmers had difficulty maneuvering through the process and acquiring land (Garcia 1975:16). Settlers increasingly squatted on land that belonged to Mexicans,

citing their preemption rights, which was the tradition that squatters had the first opportunity to buy the unimproved, unclaimed land for a fair price before auction (Garcia 1975:22). Squatters increasingly challenged the validity of Spanish-Mexican claims through the Board of Land Commissioners created by the California Land Claim Act of 1851 (Garcia 1975:22-23). Most Californios did not retain their original land holdings by 1860, including Santiago Arguello, who was granted the former Mission San Diego land in 1846 and eventually lost \$24,000 in property (Garcia 1975:24).

Following the establishment of forts throughout the area, the California desert region again opened for exploration and settlement. As part of an effort to establish a railroad route from St. Louis to the Pacific Ocean, the U.S. Government conducted a series of surveys between 1853 and 1855 to identify feasible routes. One of the railroad survey parties, led by Lieutenant R.S. Williamson, included a young geologist, William Phipps Blake, who was the first to identify the Salton Trough as an ancient lake bed (Cory and Blake 1915; Rice et al. 1996) and recognized the fertility of the basin. Sporadic flooding occurred at least eight times from 1824 to 1904. It was during this time that the 1856 U.S. Government Land Office survey documented several historic trails within the region, as well as the Tipai settlement at San Sebastian Marsh (Warren et al. 1981; Warren and Roske 1981).

By 1860, most of the land in San Diego region was unimproved farmland and some ranches (Garcia 1975:15). Settlement of the area occurred through homesteading primarily, which was authorized by the Homestead Act during the Civil War. The Timber Act, passed in 1873, also spurred settlement. It required a 10-year cultivation period of healthy trees. Some speculators and ranchers used this law as a way to obtain land for purposes other than what the patent stated. In the 1870s and 1880s, small farming communities were quickly established throughout San Diego County as settlers took up homestead claims on government land or small holdings purchased from real estate developers.

Significant economic development of the Colorado Desert region began in the 1870s and came to fruition in the early part of the twentieth century. Development was dependent largely on transportation and the availability of potable water. The first of these came in 1872 with the construction of the Southern Pacific Railroad from Los Angeles to present-day Indio, and eventually to Yuma. The early townsite of Indio, the midpoint between Los Angeles and Yuma, was created to provide living quarters for train crews and railroad workers. The first trains ran on May 29, 1876 (Pittman 1995:36). The Southern Pacific continued east, paralleling an 1857 road along the eastern side of the Salton Trough. Railroad stops were built at Walters (now called Mecca), Woodspur (Coachella), and Thermal, among others. The same large dunes that had hindered de Anza's expedition hindered construction of the railroad.

The Southern Pacific Railroad was finally forced to build along the eastern edge of what came to be known as the Imperial Sand Dunes. Railroad sidings in the area with names such as Glamis, Amos, and Ogilby developed into small company towns. The second Transcontinental Railroad was completed when the Southern Pacific and Atchison, Topeka, and Santa Fe Railroads were linked at Deming in New Mexico Territory on March 8, 1881, providing settlers relatively quick and easy access to the region. The citizens of Imperial Valley petitioned the Southern Pacific Company to build a branch line south, connecting the valley to the main Southern Pacific Railroad. In 1903, the line was completed from Old Beach (Niland) to Imperial. By 1904, the line had been extended to Calexico (Heath 1945). A branch line ran from El Centro to Seeley, connecting the Southern Pacific to the San Diego and Arizona Eastern Railroad (Farr 1918). The San Diego and Arizona Eastern Railroad ran from 1919 to 1983, connecting San Diego and Imperial Counties (Crawford 2010).

The completion of the railroad resulted in an unprecedented real estate boom for the city and county of San Diego. The population of San Diego swelled by 700 percent from 5,000 in 1885 to 40,000 in 1889 (Hector et al. 2004:18). Most of the growth was concentrated in the coastal areas and adjacent inland valleys, west of the present Project area, but Imperial County began to experience significant development during the first decade of the twentieth century, with the inauguration of an irrigation system tapping the waters of the Colorado River.

3.3.1 Imperial County

The County of Imperial was founded on August 15, 1907. It was the last county to be organized in California and measures 4,087 mi² in area (O'Dell 1957:8). Largely unoccupied by Euro-Americans through much of the early nineteenth century, the historic development of the western portion of the Imperial County has been influenced by three major water bodies. These include the Salton Sea, the Alamo River, and the New River, the latter of which lies less than one mile southwest of the Project area. All three landforms lie are the result of a manmade accident that occurred between 1905 and 1907. A discussion of each of these geographic features is provided below.

Beginning in the early twentieth century, population in the county began to increase with the completion of the Alamo Canal, which directed water from the Colorado River, into Mexico, and back into California (O'Dell 1957:87-88). By 1905, there were about 67,000 irrigated acres farmed by recent settlers to the valley (Bright 1998:70; Hendricks 1971:8). Over the next twenty years, many farmers moved into the county, drawn by the growing agricultural industry, which took off with the construction of the Hoover Dam in 1936 and the All-American Canal in 1940.

Cotton became a major industry in the vicinity of the Project area with 50,000 acres of land in the county devoted to its cultivation in 1914 (McGroarty 1914:27). Alfalfa was another important crop, but as production exceeded demand, it became too expensive to export. As a result, dairy farming became a growing industry, with 2,000 dairies opening in the valley to make use of the surplus alfalfa (Anderholt 1989:53). Historically, most of the land within the Project area has been owned by small-scale farms, some of which have been in operation since the early twentieth century (see Section 3.4.3 below). Although Imperial County is rich in a variety of mineral resources (e.g., clays, gypsum, and marble), mining does not appear to have developed as an important industry in the Project area.

3.3.2 Salton Sea

The Salton Sea is in the location of the historic Lake Cahuilla, which the Colorado River periodically emptied for centuries (San Diego Union-Tribune 2015). In 1905, high spring flooding on the Colorado River spilled over a California Development Company canal, overflowing through the Alamo channels, and flooding the Imperial Valley. The entire volume of the Colorado River rushed down into the Salton Sea until engineers were able to stop the flow of water in 1907, two years after the initial breach. By this time, the Salton Sea was a 400 square meter body of water – larger than Lake Tahoe (Picone 2021)

The Salton Sea is an endorheic lake, which means the waters never discharge into the ocean and either seep into the earth or evaporates. As a result, the lake has a higher saline level than the Pacific Ocean and is constantly increasing in salinity from evaporation (Picone 2021). While the saline levels were lower in the 1950s and 1960s, the Salton Sea was a popular tourist destination where millions of visitors would come to the warm waters every year, sometimes drawing more tourists than Yosemite (Picone 2021). In the 1950s, the California Department of Fish and Game stocked the lake with fish in a successful effort to draw fisherman. A yacht club opened, and many

high-profile Hollywood stars visited, including Sony Bono, who learned how to water ski on the sea (San Diego Union-Tribune 2015). By the 1970s, tourism came to a halt as rising salinity, shoreline flooding, and fertilizer runoff from nearby farms caused algal blooms and elevated bacterial levels. This caused a mass-die-off of the sea's fish, and in turn, the local bird populations (Picone 2021). Today, the Salton Sea remains a busy stopping spot for migratory birds. The main tourist draw is the Sonny Bono Salton Sea National Wildlife Refuge (NWR) on the southeastern shores of the Salton Sea. As many as 25,000 visitors a year visit the NWR each year for recreational purposes (San Diego Union-Tribune 2015).

3.3.3 Canal System

The Alamo Canal, completed in 1901 by the California Development Company, was the first canal to serve Imperial County. By 1905, Imperial County had 80 miles of canals and 700 miles of distribution canals. Most of the water was redirected from Colorado River, providing water to 12 water districts that served Imperial Valley. Prior to 1936, the water supply for the Imperial Valley was silt laden. The canal system quickly became clogged and dredging the system was difficult and expensive. The California Development Company did not have the financial resources to keep the system clear. As described above, construction of a new control gate in 1905, coinciding with unusually heavy floods, led the Colorado River to overflow its banks and flood the Imperial Valley. A total of 13,000 acres of irrigable land was destroyed as a result with an additional 30,000 acres left without a water supply. All crops were lost and by 1909, the California Development Company was bankrupted.

The Imperial Irrigation District (IID) was formed in 1911 under a state charter to acquire properties of the bankrupt California Development Company. By 1922, the IID had acquired 13 water companies and between 1930 and 1940, the All-American Canal (AAC) was built to replace the Alamo Canal (Dowd 1956:88). The AAC provided reliable water to the valley from the Colorado River and by 1942, became the sole source of imported water for the Imperial Valley. Today, approximately 1,667 miles of canals and laterals distribute irrigation water within IID's service area (Bureau of Reclamation n.d.).

Three major distribution canals channel water throughout the Imperial Valley: East Highline (EHL), CM, and Westside Main (WSM) (CH2M Hill 2001). The three canals service different portions of the valley: the EHL serves IID's area east of the Alamo River, the CM Canal serves the area between the Alamo River and the New River; and the WSM serves the area west of the New River. The CM Canal branches from the AAC near the town of Calexico and runs northward through the central portion of the IID. Following its construction, a network of irrigation laterals was constructed off the CM Canal, most of which run northward. The CM Canal system has one associated reservoir, the Fudge Reservoir, which is located near Brawley.

One of the largest laterals that is associated with the CM Canal is the Dogwood Canal. Branching off the CM Canal near Highway 111, the canal runs west paralleling the CM Canal for approximately 2.5 miles before turning north and continuing along Dogwood Road for a distance of 10.3 miles. An approximately 0.7-mile-long portion of the canal within the city of El Centro runs through an underground pipeline. Although the date of construction of the canal is not known, historical maps indicate that it was operational as early as the 1910s (USGS 1915).

The irrigation water that is transported through the CM Canal system drains into New River, which flows west and north from the Mexicali Valley in Baja California to the Salton Sea. The modern river course was created in 1905-1907 by high spring flooding on the Colorado River. Washing out portions of the Alamo Canal, the flood water coursed into the Salton Basin and created the New

River channel (Dowd 1956:35). The New River eventually became one of the main outlets to the Salton Sea with extensive drainage systems constructed by the IID in the early decades of the twentieth century (Dowd 1956:36).

Within the Project vicinity, much of the land south of the CM Canal is irrigated by a series of lateral canals originating off the Beech Canal. The Beech Canal is a 6.5-mile-long structure that diverges from the CM Canal in Calexico and drains into the New River. Historic topographic maps indicate that the canal and its laterals were built between 1907 and 1915 (USGS 1907 and 1915). A drainage system associated with the Beech Canal appears to have been built by the IID sometime in the late 1920s or 1930s (Dowd 1956:70-71). The Beech Drain runs along the southern edge of the CM Canal in a westward direction for a distance of approximately 1.5 miles to empty into the New River.

4 Background Research

4.1 Cultural Resource Inventory

Chronicle Heritage conducted an in-person records search at the SCIC, housed at San Diego State University, on October 4, 2023. This inventory effort included the Project area along with a corresponding one-mile buffer, collectively termed the records search area. The objective of the SCIC records search was to identify previous studies and prehistoric and historical cultural resources within the records search area. The results obtained from the SCIC were supplemented with information from Chronicle Heritage's cultural resource database. A summary of the SCIC findings is provided in Appendix A (Confidential).

As part of the cultural resources inventory, Chronicle Heritage staff also conducted archival research to characterize the developmental history of the Project area and Native American outreach to obtain information on Native American cultural resources within the immediate vicinity of the Project area. A summary of the results of the record search and background research is provided below.

4.1.1 Previous Cultural Resource Investigations

The data review indicates that no fewer than 37 previous investigations have been conducted and documented within one mile of the Project area since 1976 (Table 4-1). Fifteen of these studies encompassed portions of the Project area. Many of the prior studies were associated with proposed geothermal developments. The most recent of these studies was conducted in 2023 by PaleoWest (Clark and Severen 2023). A description of this study is provided below.

Table 4-1. Previous Cultural Resource Studies within One-Mile of the Project Area

Report Number	Author	Year	Title
IM-00063	Von Werhof, Jay, and Shrilee Von Werlhof	1976	Archaeological Examination of a Proposed Geothermal Testing Site Near Heber, California
IM-00066	Von Werhof, Jay, and Shrilee Von Werlhof	1976	Archaeological Record Search of the Heber California Region
IM-00072	Von Werhof, Jay, and Shrilee Von Werlhof	1976	Archaeological Examinations for the Wastewater Facilities Plan Report Sewer Rehabilitation, Calexico, California
IM-00075	Von Werhof, Jay, and Shrilee Von Werlhof	1976	Archaeological Examinations of Certain Geothermal Well Test-Site Areas in the Heber California District
IM-00115	Von Werhof, Jay, and Shrilee Von Werlhof	1977	Archaeological Examination of the Heber Anomaly Report Prepared for VTN Consolidated, Inc.
IM-00123	VTN Consolidated, Inc.	1977	Draft Environmental Impact Report for the Heber Geothermal Demonstration Project
IM-00125	Pritchett, Howard E., and Lorraine Pritchett	1977	Archaeological Examinations of a Proposed Site for ta Commercial Research Aguacultural Farm at Salton City, California

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Report Number	Author	Year	Title
IM-00185	Von Werhof, Jay, and George Collins	1979	Archaeological Examinations of Proposed Geothermal Facilities near Heber, CA
IM-00192	VTN Consolidated, Inc.	1979	Draft Master Environmental Impact Report for a 500-Megawatt Geothermal Development at Heber, Imperial County, California
IM-00199	Walker, Carol, Charles Bull, and Jay Von Werlhof	1979	Cultural Resource Study of a Proposed Electric Transmission Line from Jade to the Sand Hills, Imperial County, California
IM-00233	Walker, Carol, Charles Bull, and Jay Von Werlhof	1981	Cultural Resource Study of a Proposed Electric Transmission Line from Jade to the Sand Hills, Imperial County, California
IM-00235	Bureau of Land Management	1981	APS/SDG&E Interconnection Project – Supplement to the Draft Environmental Document
IM-00272	Sanchez, Miguel	1982	Draft Environmental Impact Report – Current Land Use Plan, Heber Planning Unit
IM-00301	Welch, Patrick	1983	Cultural Resource Inventory for Thirty Proposed Asset Management Parcels in Imperial County, California
IM-00368	Imperial County Planning Department	1987	Chevron Geothermal Company of California Supplemental Project Information for the Auxiliary Production Facility Heber Geothermal Unit, Imperial County
IM-00441	ENSR Consulting and Engineering	1990	Environmental Assessment/Initial Study for the Placement of Fiber Optic Facilities Between Salton Microwave Station and Calexico, California
IM-00506	Green, Eileen, and Joan Middleton	1994	Cultural Resources Overview, All-American Canal Lining Project, Final Report
IM-00536	Burkenroad, David	1979	Phase One Regional Studies APS/SDG&E Interconnection Project Transmission System Environmental Study Cultural Resources: History
IM-00537	Wirth Associates, Inc.	1979	Phase One Regional Studies APS/SDG&E Interconnection Project Transmission System Environmental Study Cultural Resources: Archaeology
IM-00538	Imperial County	1979	Proposed Workslope Phase II Cultural Resources Studies APS-SDG&E Transmission Interconnect Project, Miguel to San Hills, Sand Hills to PVNGS
IM-00547	Cultural Systems Research, Inc.	1982	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 500KV Transmission Line
IM-00595	CSRI	1982	Mountain Springs (Jade) to Sand Hills Data Recovery Preliminary Report
IM-00605	Barrett Consulting Group	1996	Preliminary Engineering Report for the Kloke Tract
IM-00647	City of Calexico	1997	Archaeological Assessment of the Kloke Tract
IM-00829	Schaefer, Jerry, and Collin O'Neill	2001	The All-American Canal: A Historic Properties Inventory and Evaluation

Report Number	Author	Year	Title
IM-00956	Underwood, Jackson	2005	Archaeological Reconnaissance of Los Lagos, Imperial County, California
IM-01080	Von Werhof, Jay	1999	Archaeological Examinations of the Heber Facilities Sewer and Water Improvement Project
IM-01095	Garnsey, Michael	2007	Cultural Resources Study for the Proposed Mosaic Project, Imperial County, California
IM-01101	BRG Consulting, Inc.	2007	Environmental Initial Study – Uniform Applications No. 2006-14, III Calexico Place
IM-01135	HDR	2006	Initial Study/Mitigated Negative Declaration – Towncenter Industrial Plaza, Calexico, California
IM-01214	Hovey, Kevin	2006	Historic Property Survey Report – The Widening of a 1,700-foot-long Portion of Cole Road Between Kloke Road to the West and the Southern Pacific Railway Right-of-way to the East in the County of Imperial, California
IM-01252	HDR	2007	Draft Environmental Impact Report – Los Lagos Specific Plan, Calexico, California
IM-01253	BRG Consulting, Inc.	2008	Draft Environmental Impact Report for the 111 Calexico Place Specific Plan
IM-01306	Wirth Associates, Inc.	1980	APS/SDG&E Interconnection Project Environmental Study Phase II Corridor Studies – Native American Cultural Resources Appendices
IM-01313	Wirth Associates, Inc.	1980	APS/SDG&E Interconnection Project Environmental Study Phase II Corridor Studies –Cultural Resources: Archaeology
IM-01727	Roberts, Ted, and Lauren DeOliveira	2019	Phase I Cultural Resources Report for the Heber 1 Expansion Project, Imperial County, California.
N/A	Clark and Severen	2023	Cultural Resource Assessment for the Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Facilities, Imperial County, California

Bold indicates prior cultural resource studies that include the current Project area.

Clark and Severen (2023)

In February 2023, PaleoWest conducted a cultural resource assessment for the Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Parasitic Facilities (Clark and Severen 2023). A pedestrian survey documented three historic built-environment resources (CM Canal, Dogwood Canal, and Beech Canal and Drain), all of which were irrigation-related features associated with the All-American Canal system. PaleoWest analyzed the CRHR eligibility of the three cultural resources under Criteria 1, 2, 3, and 4. The CM Canal was recommended eligible for listing on the CRHR; the Dogwood Canal and Beech Canal and Drain were both recommended not eligible for listing on the CRHR due to a lack of integrity.

PaleoWest’s survey inventoried approximately 28 acres of the solar field proposed for the current Project. Additionally, an approximately 1.0-mile-long segment of the 2.3-mile-long current Project’s interconnection line alignment was also surveyed as part of their study.

4.1.2 Previously Recorded Cultural Resources

The review of the record search data indicate that 10 cultural resources have been previously documented within one mile of the Project area (Table 4-2). All these resources date to the historic period and include the mapped locations of telegraph poles, a mesquite grove, a railroad segment, multiple canals and irrigation features, and a pool facility. Four of the resources intersect the proposed Project area. A description of each of these resources is presented below.

Table 4-2. Previously Documented Cultural Resource Studies in One-Mile of the Project Area

Primary No.	Trinomial	Resource Type	Resource Description
P-13-003309		Unknown	Mesquite grove
P-13-003312	CA-IMP-3312H	Unknown	Photo update of U.S. Military Telegraph Line mapped on 1880 US GLO Survey Map
P-13-003313	CA-IMP-3313H	Unknown	Photo update of U.S. Military Telegraph Line mapped on 1880 US GLO Survey Map
P-13-007130		Structure	All American Canal
P-13-008682 (also recorded as P-13-007699)	CA-IMP-8166H (also recorded as CA-IMP-7594H)	Structure	Niland to Calexico Railroad
P-13-009077		Structure	Cole Road Pool
P-13-012743		Structure	Irrigation drop feature for the Strout Drain No. 2
N/A		Structure	Central Main Canal
N/A		Structure	Dogwood Canal
N/A		Structure	Beech Canal and Drain

Bold indicates a cultural resource that intersects the current Project area.

Niland to Calexico Railroad (P-13-008682/CA-IMP-8166H)

The Niland to Calexico Railroad (P-13-008682/CA-IMP-8166H) was initially recorded in 2003 by the Imperial Valley Desert Museum (Collins and Pfaum 2003). The resource consists of an approximately 40-mile-long rail line that branches off the Southern Pacific Railway at Niland and extends in a roughly southerly direction to Calexico. The railway is composed of a standard gauge track on a gravel base. Constructed between 1903-1904, the railroad served to connect the main Southern Pacific line with cities in Imperial County. The line is still in use to transport goods from Mexico and the Imperial County to the rest of the United States. It is not known if the resource was previously evaluated for listing on the CRHR.

Central Main (CM) Canal

The CM Canal is one of the major distribution canals that channels water through the Imperial Valley. The linear feature branches off the All-American Canal northeast of Calexico. It runs in a roughly northwest direction for approximately 27 miles to drain into the New River. An approximately 3-mile-long segment of the canal was recorded in PaleoWest's study (Clark and Severen 2023). The CM Canal in this area ranges from approximately 80 to 100 feet in width and is contained within sloped earthen banks that are flanked by dirt and paved access roads. Fairly

dense, low vegetation lines the areas of the banks nearest the water. Although the exact date of construction is not known, historical maps indicate that it was operational in the early 1900s (USGS 1907). An evaluation of significance found that the CM Canal is eligible under CRHR Criterion 1 because of its association with historical events that have made a significant contribution to the broad patterns of our history (Clark and Severen 2023).

Dogwood Canal

An approximately 3.5-mile-long segment of the Dogwood Canal was recorded by PaleoWest in 2023 (Clark and Severen 2023). The Dogwood Canal branches off the CM Canal and runs west paralleling the CM Canal for approximately 2.5 miles before turning north and continuing along Dogwood Road for 10.3 miles. Several smaller laterals diverge off the canal along its route. The recorded canal segment consists of an open channel with earthen banks. Portions of the alignment have been lined with concrete and numerous check/drop structures have been built along its course. Historical maps indicate that the canal was operational by the mid 1910's (USGS 1915). An evaluation of significance concluded that the Dogwood Canal meets Criterion 1 for listing on the CRHR (Clark and Severen 2023). However, the resource lacks integrity of setting, feeling, association, workmanship, and materials. Due to the loss of integrity, the character-defining aspects of the Dogwood Canal do not retain sufficient integrity to convey its significance under Criterion 1 and the resource is not eligible for the CRHR.

Beech Canal and Drain

Beech Canal is a 6.5-mile-long structure that originates off the CM Canal in Callexico and drains into the New River. A segment of the canal and associated drainage system were recorded by PaleoWest in 2023 (Clark and Severen 2023). Several smaller laterals diverge off the north and south sides of the canal along its length. The Beech Canal is an open, concrete-lined, trapezoidal-shaped structure with smaller laterals that are also lined with concrete. Based on a contractor's date stamp, at least some of the structures were lined in 2012. The laterals have numerous check/drop structures, which consist of single gates with chute and cement walls that operate with a jack-type lifting mechanism resting on a metal or wooden cross beam. Historic topographic maps indicate that the Beech Canal and its laterals were built between 1907 and 1915.

The Beech Canal irrigation system also includes a series of dirt-lined drainage ditches that remove excess water from the irrigated fields. The largest of these is the Beech Drain, which runs along the southern edge of the CM Canal in a westward direction for approximately 1.5 miles to empty into the New River. The drainage system appears to postdate the construction of the Beech Canal and was likely built by the IID sometime in the late 1920s or 1930s. PaleoWest conducted an evaluation of significance of the Beech Canal and Drain and concluded that the resource meets Criterion 1 for listing on the CRHR (Clark and Severen 2023). However, it lacks integrity of setting, feeling, association, workmanship, and materials. Due to the loss of integrity, the character-defining aspects of the Beech Canal and Drain do not retain sufficient integrity to convey its significance under Criterion 1 and the resource is not eligible for the CRHR.

4.2 Historic Maps and Aerial Photographs

Historical maps consulted as part of the background research include the BLM's General Lands Office (GLO) survey plat maps (1856 and 1880) and the *Holtville, CA* (1907) and *El Centro, CA* (1915, 1942, 1954, 1955, 1958, 1961, 1964, and 1989) 30-minute, *Heber, CA* (1940, 1943, and 1957a) 15-minute, and *Heber, CA* (1957b and 2012) 7.5-minute USGS topographic quadrangles. Aerial photographs

available at NETROnline (2023) dated 1953, 1984, 1996, 2002, 2005, 2009, 2010, 2012, 2014, 2016, 2019, and 2020 were also reviewed.

The CM Canal is first depicted on the 1907 *Holtville, CA* topographic map which covers the area east of the Project (USGS 1907). The earliest map showing development within the Project area dates to 1915 (USGS 1915). At this time, the CM and Dogwood canals are present and a network of roads, including Dogwood Road and Pfizer Road (Ware Road), has been built south of the community of Heber; the Niland to Calexico Railroad is shown running in a northwest-southeast direction through the eastern portion of the Project area. By the early 1940s, one building has been constructed in the southwest corner of the solar field (USGS 1940). An aerial photograph shows that the entirety of the Project area is under cultivation by 1953; Beech Canal and Drain have also been constructed by this time (NETROnline 2023). On a 1984 aerial image, the Heber 1 Geothermal Energy Facility is under construction with the facility became operational in 1985 (NETROnline 2023; Southern California Public Power Authority 2023). No notable changes in the use of the Project area have occurred since the 1980s (NETROnline 2023).

4.3 Native American Outreach

Chronicle Heritage also requested a search of the Sacred Lands File (SLF) from the NAHC on October 10, 2023. The NAHC responded on November 14, 2023 and noted that the SLF search results were positive. In addition, Chronicle Heritage sent outreach letters to 24 individuals representing 16 local Native American tribal groups on November 7 and 8, 2023 to elicit information on Native American cultural resources that may be located in the vicinity of the proposed Project. Follow-up phone calls to individuals who had not yet responded were conducted on November 20, 2023. To date, six responses have been received. A summary of responses is provided below.

- On November 7, 2023, an email was received from Erica M. Pinto, Chairwoman for the Jamul Indian Village of California. Chairperson Pinto stated that the Jamul Indian Village defers to tribes closer to the Project.
- On November 14, 2023, Bernice Paipa responded via email on behalf of Chairperson Martinez. Ms. Paipa stated that the Sycuan Cultural Resource Center has consulted their maps and determined the project described is not within the boundaries of the recognized Sycuan Indian Reservation. However, they have determined it is within the boundaries of the Kumeyaay Nation's traditional territory. Imperial County is the homeland to the Kumeyaay Nation and the Sycuan have ancestral ties to this area as well as a historical, cultural, spiritual and religious interest. The Sycuan requested a time to meet and discuss the cultural and archaeological reports and the impact this project will have on the area. In addition, Ms. Paipa requested that Kumeyaay Monitors also be requested during any ground disturbance and surveys.
- Daniel Tsosie, Cultural Resource Manager for the Campo Band of Mission Indians, emailed on November 16, 2023 and stated that the Campo Band had concerns regarding the Project. The Project area is within or adjacent to Kumeyaay travel/migration/ and trade routes. Mr. Tsosie requested a Native American Monitor be present during public surveys, soils testing, and during ground disturbance. He also requested that Campo Band is included be included in the treatment and monitoring plan.

- Chronicle Heritage staff discussed the Project on a phone call with Manfred Scott, Acting Chairman of the Kww'ts'an Cultural Committee, on November 20, 2023. Chairperson Soctt stated he was planning on visiting the Project area but had been unable to make it out yet. He intends to conduct the site visit soon and will reach out to Chronicle Heritage if he has any comments or questions.
- Ray Teran of the Viejas (Baron Long) Group of Capitan Grande of Mission Indians of the Viejas Reservation responded via email on November 20, 2023 and stated that he had reviewed the letter and determined that the Project site has cultural significance or ties to Viejas. Mr. Teran noted that resources have been located within or adjacent to the proposed Project area. He requested that a Kumeyaay Cultural Monitor be on site for ground disturbing activities and asked to be informed of any new developments such as inadvertent discovery of cultural artifacts, cremation sites, or human remains.
- Ernest Pingleton, Tribal Historic Officer for the Viejas Band of Kumeyaay Indians, returned call on November 20, 2023 and requested that a Kumeyaay monitor be present during ground disturbance activities for the Project.

5 Field Investigation

5.1 Field Methods

An initial cultural resource survey of the Project area was completed by Chronicle Heritage between October 25 and 27, 2023 with supplemental survey undertaken on January 17, 2024. PaleoWest's Associate Archaeologist Marit Van Cant served as the Field Director for both efforts with assistance from Field Technicians Mathias Cien-Mayer and Shakira Habib. The survey methods consisted of walking a series of parallel pedestrian transects spaced at 10–15 meter (33–50-foot) intervals across the solar field. A 300-foot (91-meter) wide buffer was also surveyed along the proposed interconnection line alignment.

The surveys encompassed 127 acres of the proposed 155-acre solar field and a 1.3-mile-long portion (47 acres) of the 2.3-mile-long interconnection line alignment. The remaining portions of the solar field (28 acres) and interconnection line alignment (37 acres) were not included in the current field work effort as these areas had been recently surveyed in February 2023 by PaleoWest (Clark and Severen 2023).

Survey transects were navigated using georeferenced maps on iPad tablets. An approximately 2-acre cleared area within the solar field, which contained geothermal pipeline and storage/laydown area, was fenced and inaccessible. Additionally, the portion of the interconnection alignment within the Heber 1 Geothermal Energy Facility, the Heber Geothermal Energy Complex, and an adjacent construction/aggregates company facility were also not surveyed due to access issues. All of these areas were inspected remotely from the edge of the property or fence boundaries. Crew members also opportunistically examined any subsurface exposures, including rodent burrows and cut banks.

The survey area was documented with digital photographs that included general views of the topography, vegetation density, and other images. A photograph log was maintained to include photograph number, date, orientation, photograph description, and comments. The surveyors carefully inspected all areas likely to contain or exhibit sensitive cultural resources to ensure discovery and documentation of cultural resources located within the survey area. In particular, the survey crews carefully inspected rocky outcroppings, banks, clearings, and other habitable flat spots.

All cultural materials and features of an eligible age were recorded during the survey in accordance with OHP (1995) guidelines. Historic period archaeological indicators include the remnants of buildings, objects, and structures, or concentrations of materials at least 45 years in age, such as domestic refuse (e.g., glass bottles, ceramics, toys, buttons, and leather shoes), refuse from other pursuits such as agriculture (e.g., metal tanks, farm machinery parts, and horse shoes) or structural materials (e.g., nails, glass window panes, corrugated metal, wood posts or planks, metal pipes and fittings, and railroad spurs). Prehistoric site indicators include areas of darker soil with concentrations of ash, charcoal, animal bone (burned or unburned), shell, flaked stone, ground-stone, pottery, or even human bone. Historic built-environment resources included standing buildings or structures that were constructed at least 45 years ago.

5.2 Results

Much of the survey area is located within and adjacent to agricultural fields (Figure 5-1 to 5-2). Exceptions to this include: portions of the buffer areas associated with the interconnection



Figure 5-1. Overview of solar field, facing north.



Figure 5-2. Lateral canal along western edge of solar field (left) and Dogwood Road (right), facing south.

alignment that runs along existing paved roadways; the interconnection alignment that extends into the Heber Geothermal Energy Complex and construction/aggregates company; and the terminus of the interconnection alignment within the Heber 1 Geothermal Energy Facility (Figure 5-3). All of these areas were developed with ground surfaces displaying extensive disturbance. The topography across the Project area is relatively flat except for human-made canals and drainage ditches. Soils were fine- to medium-grained silty clay loam that is light reddish-brown in color.

Due to the extensive agricultural and geothermal development in the Project area, little natural vegetation was observed in the survey area. The entirety of the ground surface within the Project area exhibits some level of prior disturbance. The primary sources of this disturbance include agricultural activities, the construction of canals and drainage ditches, installation of transmission lines and roadways, and the development and maintenance of geothermal facilities.

Ground visibility across the survey area was variable. At the time of the survey, much of the solar field was under cultivation with alfalfa obscuring portions of the ground surface (Figure 5-1); areas of higher ground visibility were present along the edges of the fields which contained irrigation laterals and access roads (Figure 5-4). Visibility was also relatively low for portions of the interconnection alignment that ran along Dogwood Road due to the presence of paved roadways, gravel shoulders, and concrete-lined irrigation canals (Figure 5-3). Other areas of the interconnection alignment displayed excellent visibility (80 – 90%) and were largely devoid of vegetation.

The survey of the Project area resulted in the relocation of segments of four previously documented historic built-environment resources including the Niland to Calexico Railroad (P-13-008682), the CM Canal, the Dogwood Canal, the Beech Canal and Drain system. Three newly identified cultural resources were also recorded during the survey. These include a historic residence at 602 Dogwood Road and two additional irrigation-related features (Daffodil Canal and Date Drain No. 3). Figure 5-5 shows the location of all the cultural resources identified in the Project area. Descriptions and evaluations of the documented resources are provided below; Department of Parks and Recreation (DPR) 523 forms and updates are provided in Appendix C.

5.2.1 Previously Recorded Cultural Resources

Niland to Calexico Railroad (P-13-008682/CA-IMP-8166H)

A portion of the proposed interconnection alignment intersects the Niland to Calexico Railroad north of Jasper Road and south of East Fawcett Road between Ware Road and Pfizer Road (Sections 28 and 33, Township 16 South, Range 14 East) (Figure 5-5). The railroad consists of a single set of tracks resting on a gravel ballast (Figure 5-6). The ballast is approximately 18 to 20 feet in width with the height of approximately 2 to 3 feet. A utility line consisting of single wooden pole runs along the eastern side of the railroad alignment. The tracks are in good condition and appear to be regularly maintained.

CRHR Evaluation

The Niland to Calexico Railroad does not appear to have been evaluated for listing on the CRHR. As is discussed in the impact analysis (Section 6.1), the resource will be avoided. Because the Project has no potential to impact the railroad, the historic-era resource was not evaluated for listing on the CRHR.



Figure 5-3. East end of proposed interconnection alignment at Heber 1 Geothermal Energy Facility, facing west.



Figure 5-4. Irrigation lateral in solar field, facing east.

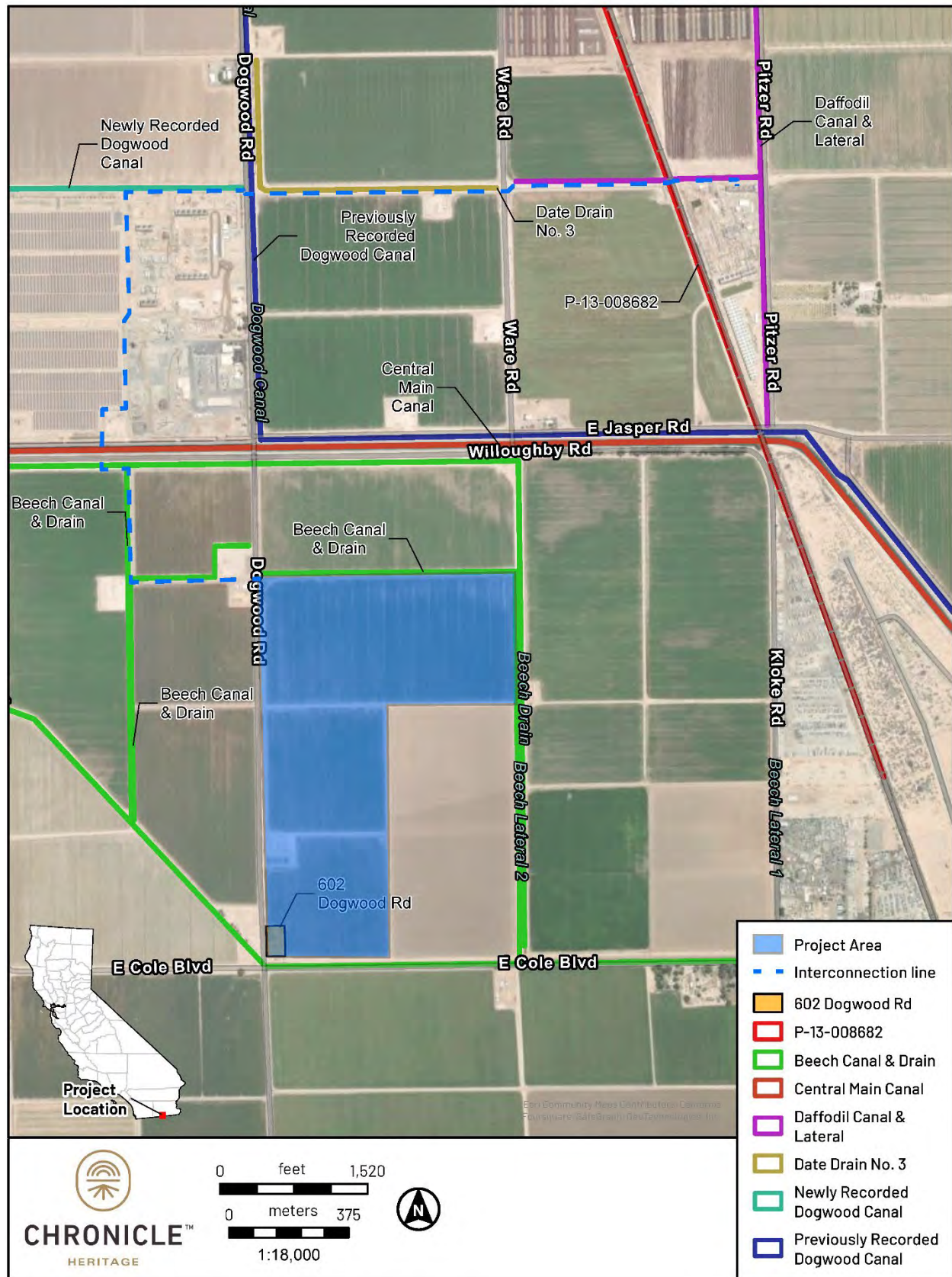


Figure 5-5. Resource location map.



Figure 5-6. View of the Niland to Calexico Railroad, facing north.

Central Main (CM) Canal

The proposed interconnection alignment intersects the CM Canal west of Dogwood Road in the southern extent of Section 32, Township 16 South, Range 14 East (Figure 5-5). The canal in This area is approximately 100 feet in width and is characterized by sloped earthen banks that are flanked by dirt roads (Figure 5-7). No changes were observed in the condition of the resource since PaleoWest documented the resource in February 2023 (Clark and Severen 2023).

CRHR Evaluation

PaleoWest previously recommended the CM Canal eligible for listing under Criterion 1 because of its association with historical events that have made a significant contribution to the broad patterns of our history (Clark and Severen 2023). Because the condition of the irrigation canal has not changed since February 2023, the existing recommendation of eligibility remains valid. Chronicle Heritage considers the CM Canal to be eligible for CRHR listing under Criterion 1.

Dogwood Canal

A portion of the proposed interconnection alignment intersects the Dogwood Canal just east of Dogwood Road in Section 33, Township 16 South, Range 14 East. The canal consists of an open channel, some of which has been lined with concrete. The structure's top width ranges from approximately 20 to 60 feet. Although the date of construction of the canal is not known, historical maps indicate that it was operational by 1915.



Figure 5-7. View of the CM Canal west of Dogwood Road, facing east.

A previously undocumented lateral (Dogwood Lateral 2) associated with the canal was recorded by Chronicle Heritage in Section 32, Township 16 South, Range 14 East (Figure 5-5). The 0.5-mile-long lateral segment extends west of Dogwood Road just north of the Heber Geothermal Energy Complex. The lateral consists of an open, concrete-lined structure that has a top width of approximately 8 to 10 feet and an unknown depth (Figure 5-8). Historic maps indicate that the lateral was in use by the early 1940s (USGS 1943).

CRHR Evaluation

An evaluation of significance conducted by PaleoWest concluded that although the Dogwood Canal meets Criterion 1 for listing on the CRHR, the resource lacked integrity of setting, feeling, association, workmanship, and materials (Clark and Severen 2023). Due to the loss of integrity, PaleoWest argued that the character-defining aspects of the Dogwood Canal do not retain sufficient integrity to convey its significance under Criterion 1. As such, the resource was not eligible for the CRHR.

The portion of the canal system encompassing the Dogwood Lateral 2 also appears to lack integrity. The construction of the Heber Geothermal Energy Complex immediately adjacent to the lateral canal has compromised the lateral's integrity of setting, feeling, and association. Furthermore, sometime after its construction, the lateral was lined with concrete which has impacted the resource's integrity of design, workmanship, and materials. Because of the loss of integrity, Dogwood Lateral 2 does not contribute to the overall significance of the resource and the existing recommendation that the Dogwood Canal is not eligible for the CRHR remains valid.



Figure 5-8. View of the newly identified lateral (Dogwood Lateral 2) associated with the Dogwood Canal, facing west.

Beech Canal and Drain

Portions of the solar field and interconnection alignment abut and/or intersect Beech Canal and its laterals in Sections 3 and 4, Township 17 South, Range 14 East (Figure 5-5). The canal consists of an open, concrete-lined structure that has a top width of approximately 12 to 16 feet with an unknown depth. The laterals are smaller in size with a top width of approximately 6 feet and a bottom width of approximately 2 feet; the depth of the laterals is approximately 4 feet. No changes were observed in the condition of the resource since PaleoWest documented the resource in February 2023 (Clark and Severen 2023).

CRHR Evaluation

An evaluation of significance conducted by PaleoWest concluded that the Beech Canal and Drain meets Criterion 1 for listing on the CRHR (Clark and Severen 2023). However, the resource lacked integrity of setting, feeling, association, workmanship, and materials. Given the loss of integrity, PaleoWest argued that the character-defining aspects of the Beech Canal and Drain do not retain sufficient integrity to convey its significance under Criterion 1 and concluded that the resource was not eligible for the CRHR. Because the condition of the canal has not changed since February 2023, the existing recommendation of eligibility remains valid. Chronicle Heritage considers the Beech Canal and Drain to be ineligible for listing on the CRHR.

5.2.2 Newly Documented Cultural Resources

602 Dogwood Road

A historic-era residential and accessory building is located at the southwest corner of the proposed solar field (Figure 5-9). The primary building is a modest vernacular single-family residence that is clad in T1-11 siding and features a low-pitched, side-gabled roof that is sheathed in composition shingles. The building appears to have vinyl window units and a solid, single panel entryway door. The accessory building is located adjacent to the northeast corner of the residence and appears to be used as a utility shed. The dilapidated wood building includes an open doorway and flat roof. The building is clad in a combination of oriented strand board and plywood sheeting. The single-family residence and shed are setback onto the northeast corner of the parcel.

Archival research found no information on the original owner of the property at 602 Dogwood Road (Imperial County Assessor 2023). Furthermore, no building records were located to indicate the architect or builder of the residence. Although the exact date of construction for the building and utility shed are not known, a review of historical aerial photographs and topographic maps indicates that a building was present on the property as early as 1943. The utility shed appears to have been added alongside the single-family residence building sometime between 1959 and 1996.

CRHR Evaluation

The property at 602 Dogwood Road does not appear to be a significant building in the Heber area or Imperial County. Archival research found no information to assert that the single-family residence and utility shed were associated with a pattern of development pertinent to state and local histories regarding dairy farming, alfalfa farming, and mining. Therefore, the property does not appear to be eligible for listing on the CRHR under Criterion 1. Additionally, the subject property cannot be associated with a person or persons of historic significance at the state level; therefore, the property is not eligible for listing under Criterion 2. The residence is a vernacular building that does not reflect a particular architectural style. Furthermore, the building and utility shed appear were constructed with common materials, construction methods, and do not appear to stand out as a significant construction project. The single-family residence and utility shed also do not appear to be the work of a master architect and builder. Therefore, the property is not eligible for listing on the CRHR under Criterion 3. The additional study of the buildings at 602 Dogwood Road is unlikely to yield significant information on twentieth-century settlement in the Heber area of Imperial County. As a result, the resource is not recommended eligible for listing in the CRHR under Criterion 4.

Based on these findings, Chronicle Heritage recommends the 602 Dogwood Road not eligible for inclusion in the CRHR.

Daffodil Canal and Lateral

The eastern end of the proposed interconnection alignment runs adjacent to a lateral canal (Daffodil Lateral 1) associated with the Daffodil Canal. The Daffodil Canal branches off the CM Canal near the Pfizer Road and Jasper Road intersection. It runs north along the west side of Pfizer Road for approximately 1 mile. The canal consists of an open concrete-lined channel that has a top width ranging from approximately 18 to 20 feet with an unknown depth; a 440-foot-long portion of the canal east of Heber 1 Geothermal Energy Facilities is buried. At least two check/drop structures are present along its course, each of which consist of gates with chute and cement walls that operate with a jack-type lifting mechanism resting on a wooden cross beam. The condition of the



Figure 5-9. Residential building and utility shed at 602 Dogwood Road, facing north.

gates and hardware associated with these features suggest they have been replaced at some point and are not original to the structure.

The Daffodil Lateral 1 extends off the Daffodil Canal just north of the Heber 1 Geothermal Energy Facilities. The lateral measures 0.5 mile in length and consists of an open concrete-lined channel with a top width of approximately 10 feet and an unknown depth. Although the date of construction of the canal and lateral is not known, historical maps indicate that it was operational by 1940.

CRHR Evaluation

The Daffodil Canal and Lateral is a part of the IID's CM canal system, which was initially constructed in the early twentieth century. The construction and operation of the Daffodil Canal and its associated lateral are an important event in the early settlement of the Imperial Valley. The canal systems that were built at this time significantly increased the agricultural productivity of the area between the New River and Alamo River. Because the Daffodil Canal and Lateral can be directly associated with historical events that have made a significant contribution to the broad patterns of our history, it is recommended eligible under Criterion 1. The Daffodil Canal was funded and constructed by the IID and cannot be attributed to a specific individual. Because it cannot be associated with the lives of persons important in our past, it does not meet CRHR Criterion 2. The Daffodil Canal and its associated laterals are simple in design and construction and utilitarian in nature, and their construction does not represent any innovative design or building technique. Therefore, the resource does not exhibit any distinctive characteristics or engineering merits that would suggest it is significant under Criterion 3. Finally, the Daffodil Canal does not have the potential to yield any information important to the study of twentieth century channel construction and is therefore not eligible under Criterion 4.

The alignment of the Daffodil Canal has not changed since its construction in the early part of the twentieth century and as such, the resource retains integrity of location. Although agricultural fields are still prevalent in the vicinity of the Daffodil Canal, the construction and operation of industrial energy facilities in the immediate vicinity has resulted in the loss of the resource's integrity of setting, feeling, and association. The resource has experienced extensive alterations including lining the canal with concrete, replacing gates and hardware, and burying portions of the canal. As a result of these alterations, the structure lacks integrity of design, workmanship, and materials. Due to the loss of integrity, the Daffodil Canal and Lateral have lost their ability to convey significance under Criterion 1.

Based on these findings, Chronicle Heritage recommends the Daffodil Canal and Lateral not eligible for inclusion in the CRHR.

Date Drain No. 3

A portion of the interconnection alignment east of Dogwood Road runs along a historic drainage channel known as Date Drain No. 3 (Figure 5-10). The channel is a 0.70-mile-long, L-shaped earthen drainage ditch that includes an approximately 0.25-mile-long segment that runs in a north-south direction paralleling the eastern side of Dogwood Road and a 0.55-mile-long segment of the drainage running west-east along the midsection of Section 33, Township 16 South, Range 14 East. The ditch was constructed to remove excess water from the irrigated fields and appears to be associated with the Date Canal. The upper width of the drainage is 20 to 30 feet with a depth of 8 to 10 feet. Although the Date Canal is depicted on a 1915 topographic map, the Date Drain No. 3 first appears on a 1957 topographic map (USGS 1915, 1957a).



Figure 5-10. View of Date Drain No. 3, facing east.

CRHR Evaluation

The Date Canal is part of the IID's CM canal system, which was constructed in the early twentieth century. The construction and operation of the IID irrigation canals can be considered an important event in the early settlement of the Imperial Valley. The canal systems that were built at this time significantly increased the agricultural productivity of the area between the New River and Alamo River. Although the Date Canal is associated with historical events that have made a significant contribution to the broad patterns of our history, Date Drain No. 3 is a minor component of the irrigation system whose construction appears to postdate the Date Canal by several decades. Because the drainage cannot be directly associated with events that significantly contributed to the broad patterns of our history, it is not recommended eligible under Criterion 1. The Date Drain No. 3 was likely funded and constructed by the IID and cannot be attributed to a specific individual. Because it cannot be associated with the lives of persons important in our past, it does not meet CRHR Criterion 2. Date Drain No. 3 is simple in design and construction and utilitarian in nature, and its construction does not represent any innovative design or building technique. Therefore, the resource does not exhibit any distinctive characteristics or engineering merits that would suggest it is significant under Criterion 3. Finally, Date Drain No. 3 does not have the potential to yield any information important to the study of twentieth century irrigation construction and is therefore not eligible under Criterion 4.

Based on these findings, Chronicle Heritage recommends the Date Drain No. 3 not eligible for inclusion in the CRHR.

6 Impacts Analysis and Management Recommendations

The cultural resources assessment for the proposed Project included background and archival research, a pedestrian survey, and resources documentation and evaluation. As a result of these efforts, seven historic period cultural resources were identified within the Project area. These include a railroad alignment (P-13-008682; Niland to Callexico Railroad), a historic residential property (602 Dogwood Road), and five irrigation-related resources (CM Canal, Dogwood Canal, Beech Canal and Drain, Daffodil Canal and Lateral, and Date Drain No. 3). The findings of the study indicate that only two resources – the CM Canal and the Niland to Callexico Railroad (P-13-008682) – are recommended eligible or are unevaluated for listing on the CRHR, respectively. An impacts assessment is required to determine if the proposed Project will result in a substantial adverse change in the significance or potential significance of either of these cultural resources.

No further cultural resource management is recommended for the five resources that are not eligible for listing on the CRHR (602 Dogwood Road, Dogwood Canal, Beech Canal and Drain, Daffodil Canal and Lateral, and Date Drain No. 3).

6.1 Impacts Assessment

Based on the current Project design, the only Project component that will intersect the CM Canal and the Niland to Callexico Railroad are the proposed buried interconnection line. It is anticipated that the interconnection line will be installed under both the CM Canal and the Niland to Callexico Railroad. As such, the Project will not result in any physical alteration of the cultural resources. Because the Project will avoid both the CM Canal and the Niland to Callexico Railroad, Chronicle Heritage recommends a finding of no impact to historical or archaeological resources under CEQA.

6.2 Management Recommendations

The absence of known archaeological resources within one mile of the proposed Project suggests that this area is characterized by a low sensitivity for archaeological remains. However, there is a potential, albeit minimal, to encounter unanticipated cultural resources or human remains during ground-disturbing activities. Chronicle Heritage recommends the following measures, based on state and agency regulations and guidelines, to mitigate any potential adverse impacts that could occur if there were an inadvertent discovery of buried cultural resources or human remains.

6.2.1 Unanticipated Discovery of Cultural Resources

If cultural resources are encountered during ground-disturbing activities, work in the immediate area must halt and a qualified archaeologist should be contacted immediately to evaluate the find. If the discovery proves to be significant under CEQA, additional work such as data recovery excavation and Native American consultation may be warranted to mitigate any significant impacts.

6.2.2 Discovery of Human Remains

If human remains are found, regulations outlined in the State of California Health and Safety Code Section 7050.5 state no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission, which will determine and notify a most likely descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of being granted access and provide recommendations as to the treatment of the remains to the landowner.

Should there be changes in the Project design or actions proposed outside the currently defined Project area that have the potential to impact significant cultural resources, then additional cultural resource studies may be required.

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- 1982b The Lowland Patayan Ceramic Typology. In *Hohokam and Patayan*, edited by Randall H. McGuire and Michael B. Schiffer, pp. 537-570. Academic Press, New York.
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Wilke, Phillip J., and Meg McDonald

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- 2014 Archeological Research Analysis at SDI-7074 within San Diego Gas & Electric Company's East County Substation Project (ECSP), San Diego County, California. Report prepared by ASM Affiliates, submitted to the Bureau of Land Management, El Centro, CA, and SDG&E, Alpine, CA.

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Appendix A.

Records Search Results (Confidential)

Appendix B.

Native American Outreach



NATIVE AMERICAN HERITAGE COMMISSION

November 14, 2023

Tiffany Clark
PaleoWest

Via Email to: tclark@paleowest.com

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NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710

Re: 23-PC-00758 ORMAT Heber 1 Study Project, Imperial County

Dear Ms. Clark:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were positive. Please contact the tribes on the attached list for more information. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Pricilla.Torres-Fuentes@nahc.ca.gov.

Sincerely,

Pricilla Torres-Fuentes

Pricilla Torres-Fuentes
Cultural Resources Analyst

Attachment

**Native American Heritage Commission
Native American Contact List
Imperial County
11/14/2023**

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Imperial	Barona Group of the Capitan Grande	F	Art Bunce, Attorney		(760) 489-0329		buncelaw@aol.com	Diegueno	Imperial,San Diego	7/25/2023
	Campo Band of Diegueno Mission Indians	F	Ralph Goff, Chairperson	36190 Church Road, Suite 1 Campo, CA, 91906	(619) 478-9046	(619) 478-5818	rgoff@campo-nsn.gov	Diegueno	Imperial,Orange,Riverside,San Diego	
	Cocopah Indian Reservation	F	Jill McCormick, Cultural Resources Manager	14515 S. Veterans Drive Somerton, AZ, 85350	(928) 722-7521		mccormickj@cocopah.com	Cocopah	Imperial,Riverside	
	Ewiiapaayp Band of Kumeyaay Indians	F	Michael Garcia, Vice Chairperson	4054 Willows Road Alpine, CA, 91901	(619) 933-2200	(619) 445-9126	michaalg@leaningrock.net	Diegueno	Imperial,Orange,Riverside,San Diego	
	Ewiiapaayp Band of Kumeyaay Indians	F	Robert Pinto, Chairperson	4054 Willows Road Alpine, CA, 91901	(619) 368-4382	(619) 445-9126	ceo@ebki-nsn.gov	Diegueno	Imperial,Orange,Riverside,San Diego	
	Iipay Nation of Santa Ysabel	F	Virgil Perez, Chairperson	P.O. Box 130 Santa Ysabel, CA, 92070	(760) 765-0845	(760) 765-0320		Diegueno	Imperial,San Diego	
	Iipay Nation of Santa Ysabel	F	Clint Linton, Director of Cultural Resources	P.O. Box 507 Santa Ysabel, CA, 92070	(760) 803-5694		clint@redtailenvironmental.com	Diegueno	Imperial,San Diego	
	Inaja-Cosmit Band of Indians	F	Rebecca Osuna, Chairperson	2005 S. Escondido Blvd. Escondido, CA, 92025	(760) 737-7628	(760) 747-8568		Diegueno	Imperial,San Diego	
	Jamul Indian Village	F	Erica Pinto, Chairperson	P.O. Box 612 Jamul, CA, 91935	(619) 669-4785	(619) 669-4817	epinto@jiv-nsn.gov	Diegueno	Imperial,San Diego	
	Jamul Indian Village	F	Lisa Cumper, Tribal Historic Preservation Officer	P.O. Box 612 Jamul, CA, 91935	(619) 669-4855		lcumper@jiv-nsn.gov	Diegueno	Imperial,San Diego	9/5/2018
	Kwaaymii Laguna Band of Mission Indians	N	Carmen Lucas,	P.O. Box 775 Pine Valley, CA, 91962	(619) 709-4207			Kwaaymii Diegueno	Imperial,San Diego	6/20/2023
	La Posta Band of Diegueno Mission Indians	F	Gwendolyn Parada, Chairperson	8 Crestwood Road Boulevard, CA, 91905	(619) 478-2113	(619) 478-2125	LP13boots@aol.com	Diegueno	Imperial,Orange,Riverside,San Diego	
	Manzanita Band of Kumeyaay Nation	F	Angela Elliott Santos, Chairperson	P.O. Box 1302 Boulevard, CA, 91905	(619) 766-4930	(619) 766-4957		Diegueno	Imperial,Orange,Riverside,San Diego	
	Mesa Grande Band of Diegueno Mission Indians	F	Michael Linton, Chairperson	P.O. Box 270 Santa Ysabel, CA, 92070	(760) 782-3818	(760) 782-9092	mesagrandeband@msn.com	Diegueno	Imperial,Orange,Riverside,San Diego	
	Quechan Tribe of the Fort Yuma Reservation	F	Jill McCormick, Historic Preservation Officer	P.O. Box 1899 Yuma, AZ, 85366	(928) 261-0254		historicpreservation@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
	Quechan Tribe of the Fort Yuma Reservation	F	Jordan Joaquin, President, Quechan Tribal Council	P.O.Box 1899 Yuma, AZ, 85366	(760) 919-3600		executivesecretary@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
	Quechan Tribe of the Fort Yuma Reservation	F	Manfred Scott, Acting Chairman Kw'ts'an Cultural Committee	P.O. Box 1899 Yuma, AZ, 85366	(928) 210-8739		culturalcommittee@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
	San Pasqual Band of Diegueno Mission Indians	F	John Flores, Environmental Coordinator	P. O. Box 365 Valley Center, CA, 92082	(760) 749-3200	(760) 749-3876	johnf@sanpasqualtribe.org	Diegueno	Imperial,San Diego	8/16/2016
	San Pasqual Band of Diegueno Mission Indians	F	Allen Lawson, Chairperson	P.O. Box 365 Valley Center, CA, 92082	(760) 749-3200	(760) 749-3876	allenl@sanpasqualtribe.org	Diegueno	Imperial,San Diego	
	Sycuan Band of the Kumeyaay Nation	F	Bernice Paipa, Cultural Resource Specialist	Sycuan Cultural Center: 910 Willow Glen Drive El Cajon, CA, 92019	(619) 445-6917		bpaipa2@sycuan-nsn.gov	Kumeyaay	Imperial,San Diego	8/7/2023
	Sycuan Band of the Kumeyaay Nation	F	Cody Martinez, Chairman	Sycuan Tribal Office: 1 Kwaaypaay Court El Cajon, CA, 92019	(619) 445-2613		cmartinez@sycuan-nsn.gov	Kumeyaay	Imperial,San Diego	8/7/2023
	Viejas Band of Kumeyaay Indians	F	Ernest Pingleton, THPO	1 Viejas Grade Road Alpine, CA, 91901	(619) 445-3810		epingleton@viejas-nsn.gov	Kumeyaay	Imperial,San Diego	6/29/2023
	Viejas Band of Kumeyaay Indians	F	Ray Teran, Resource Management Director	1 Viejas Grade Road Alpine, CA, 91901	(619) 659-2312		rteran@viejas-nsn.gov	Kumeyaay	Imperial,San Diego	6/29/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed 23-PC-00758 ORMAT Heber 1 Study Project, Imperial County.

Record: PROJ-2023-005329
Report Type: List of Tribes
Counties: Imperial
NAHC Group: All



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REDLANDS, CALIFORNIA
3019th Street, Suite 114
Redlands, California 92374

November 20, 2023

Steven Cope, Spokesperson
San Pasqual Band of Diegueno Mission Indians
P.O. Box 365
Valley Center, CA, 92082

EXAMPLE LETTER

RE: Native American Outreach for the Ormat Heber 1 Solar Project, Imperial County, California

Dear Mr. Cope,

Chronicle Heritage is conducting a cultural resource investigation for a proposed Ormat Heber 1 Solar Project (Project) near the community of Heber, Imperial County, California. The Project proposes to develop a 12-megawatt solar energy facility that would provide parasitic load to the existing Heber 1 Geothermal Energy Facility. The proposed solar energy facilities will be developed immediately south of the proposed Dogwood/Heber 2 parasitic solar fields and will be connected by a buried medium-voltage interconnection line to the existing Heber 1 Geothermal Facility. The proposed Project site encompasses 127 acres of private land with two proposed generation interconnection transmission lines. The Project is depicted in Section 33, Township 16 South, Range 14 East, and Section 3, Township 17 South, Range 14 East on the Heber, CA topographic quadrangle (see attached map). The project is subject to compliance with the California Environmental Quality Act.

A search of the Sacred Lands File was requested from the Native American Heritage Commission for the Project on October 10, 2023. Although a response has not yet been received from the NAHC, a recent Sacred Lands File search for the adjacent Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Parasitic Facilities Projects resulted in positive findings. The contact list provided in the NAHC's response included your information with a suggestion that we contact you for information on Native American resources that may be present in the Project vicinity.

If you have knowledge of traditional cultural resources that may exist within or near the Project area shown on the enclosed map, please contact me by email at tclark@chronicleheritage.com or by telephone at (310) 210-9884. We appreciate any information you can provide.

Sincerely,

Tiffany Clark, PhD, RPA
Regional Principal Archaeologist





NATIVE AMERICAN HERITAGE COMMISSION

November 14, 2023

Tiffany Clark
PaleoWest

Via Email to: tclark@paleowest.com

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NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710

Re: 23-PC-00758 ORMAT Heber 1 Study Project, Imperial County

Dear Ms. Clark:

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Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Pricilla.Torres-Fuentes@nahc.ca.gov.

Sincerely,

Pricilla Torres-Fuentes

Pricilla Torres-Fuentes
Cultural Resources Analyst

Attachment

**Native American Heritage Commission
Native American Contact List
Imperial County
11/14/2023**

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Imperial	Barona Group of the Capitan Grande	F	Art Bunce, Attorney		(760) 489-0329		buncelaw@aol.com	Diegueno	Imperial,San Diego	7/25/2023
	Campo Band of Diegueno Mission Indians	F	Ralph Goff, Chairperson	36190 Church Road, Suite 1 Campo, CA, 91906	(619) 478-9046	(619) 478-5818	rgoff@campo-nsn.gov	Diegueno	Imperial,Orange,Riverside,San Diego	
	Cocopah Indian Reservation	F	Jill McCormick, Cultural Resources Manager	14515 S. Veterans Drive Somerton, AZ, 85350	(928) 722-7521		mccormickj@cocopah.com	Cocopah	Imperial,Riverside	
	Ewiiapaayp Band of Kumeyaay Indians	F	Michael Garcia, Vice Chairperson	4054 Willows Road Alpine, CA, 91901	(619) 933-2200	(619) 445-9126	michaalg@leaningrock.net	Diegueno	Imperial,Orange,Riverside,San Diego	
	Ewiiapaayp Band of Kumeyaay Indians	F	Robert Pinto, Chairperson	4054 Willows Road Alpine, CA, 91901	(619) 368-4382	(619) 445-9126	ceo@ebki-nsn.gov	Diegueno	Imperial,Orange,Riverside,San Diego	
	Iipay Nation of Santa Ysabel	F	Virgil Perez, Chairperson	P.O. Box 130 Santa Ysabel, CA, 92070	(760) 765-0845	(760) 765-0320		Diegueno	Imperial,San Diego	
	Iipay Nation of Santa Ysabel	F	Clint Linton, Director of Cultural Resources	P.O. Box 507 Santa Ysabel, CA, 92070	(760) 803-5694		clint@redtailenvironmental.com	Diegueno	Imperial,San Diego	
	Inaja-Cosmit Band of Indians	F	Rebecca Osuna, Chairperson	2005 S. Escondido Blvd. Escondido, CA, 92025	(760) 737-7628	(760) 747-8568		Diegueno	Imperial,San Diego	
	Jamul Indian Village	F	Erica Pinto, Chairperson	P.O. Box 612 Jamul, CA, 91935	(619) 669-4785	(619) 669-4817	epinto@jiv-nsn.gov	Diegueno	Imperial,San Diego	
	Jamul Indian Village	F	Lisa Cumper, Tribal Historic Preservation Officer	P.O. Box 612 Jamul, CA, 91935	(619) 669-4855		lcumper@jiv-nsn.gov	Diegueno	Imperial,San Diego	9/5/2018
	Kwaaymii Laguna Band of Mission Indians	N	Carmen Lucas,	P.O. Box 775 Pine Valley, CA, 91962	(619) 709-4207			Kwaaymii Diegueno	Imperial,San Diego	6/20/2023
	La Posta Band of Diegueno Mission Indians	F	Gwendolyn Parada, Chairperson	8 Crestwood Road Boulevard, CA, 91905	(619) 478-2113	(619) 478-2125	LP13boots@aol.com	Diegueno	Imperial,Orange,Riverside,San Diego	
	Manzanita Band of Kumeyaay Nation	F	Angela Elliott Santos, Chairperson	P.O. Box 1302 Boulevard, CA, 91905	(619) 766-4930	(619) 766-4957		Diegueno	Imperial,Orange,Riverside,San Diego	
	Mesa Grande Band of Diegueno Mission Indians	F	Michael Linton, Chairperson	P.O. Box 270 Santa Ysabel, CA, 92070	(760) 782-3818	(760) 782-9092	mesagrandeband@msn.com	Diegueno	Imperial,Orange,Riverside,San Diego	
	Quechan Tribe of the Fort Yuma Reservation	F	Jill McCormick, Historic Preservation Officer	P.O. Box 1899 Yuma, AZ, 85366	(928) 261-0254		historicpreservation@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
	Quechan Tribe of the Fort Yuma Reservation	F	Jordan Joaquin, President, Quechan Tribal Council	P.O.Box 1899 Yuma, AZ, 85366	(760) 919-3600		executivesecretary@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
	Quechan Tribe of the Fort Yuma Reservation	F	Manfred Scott, Acting Chairman Kw'tsan Cultural Committee	P.O. Box 1899 Yuma, AZ, 85366	(928) 210-8739		culturalcommittee@quechantribe.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
	San Pasqual Band of Diegueno Mission Indians	F	John Flores, Environmental Coordinator	P. O. Box 365 Valley Center, CA, 92082	(760) 749-3200	(760) 749-3876	johnf@sanpasqualtribe.org	Diegueno	Imperial,San Diego	8/16/2016
	San Pasqual Band of Diegueno Mission Indians	F	Allen Lawson, Chairperson	P.O. Box 365 Valley Center, CA, 92082	(760) 749-3200	(760) 749-3876	allenl@sanpasqualtribe.org	Diegueno	Imperial,San Diego	
	Sycuan Band of the Kumeyaay Nation	F	Bernice Paipa, Cultural Resource Specialist	Sycuan Cultural Center: 910 Willow Glen Drive El Cajon, CA, 92019	(619) 445-6917		bpaipa2@sycuan-nsn.gov	Kumeyaay	Imperial,San Diego	8/7/2023
	Sycuan Band of the Kumeyaay Nation	F	Cody Martinez, Chairman	Sycuan Tribal Office: 1 Kwaaypaay Court El Cajon, CA, 92019	(619) 445-2613		cmartinez@sycuan-nsn.gov	Kumeyaay	Imperial,San Diego	8/7/2023
	Viejas Band of Kumeyaay Indians	F	Ernest Pingleton, THPO	1 Viejas Grade Road Alpine, CA, 91901	(619) 445-3810		epingleton@viejas-nsn.gov	Kumeyaay	Imperial,San Diego	6/29/2023
	Viejas Band of Kumeyaay Indians	F	Ray Teran, Resource Management Director	1 Viejas Grade Road Alpine, CA, 91901	(619) 659-2312		rteran@viejas-nsn.gov	Kumeyaay	Imperial,San Diego	6/29/2023

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This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed 23-PC-00758 ORMAT Heber 1 Study Project, Imperial County.

Record: PROJ-2023-005329
Report Type: List of Tribes
Counties: Imperial
NAHC Group: All



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REDLANDS, CALIFORNIA
3019th Street, Suite 114
Redlands, California 92374

November 20, 2023

Steven Cope, Spokesperson
San Pasqual Band of Diegueno Mission Indians
P.O. Box 365
Valley Center, CA, 92082

EXAMPLE LETTER

RE: Native American Outreach for the Ormat Heber 1 Solar Project, Imperial County, California

Dear Mr. Cope,

Chronicle Heritage is conducting a cultural resource investigation for a proposed Ormat Heber 1 Solar Project (Project) near the community of Heber, Imperial County, California. The Project proposes to develop a 12-megawatt solar energy facility that would provide parasitic load to the existing Heber 1 Geothermal Energy Facility. The proposed solar energy facilities will be developed immediately south of the proposed Dogwood/Heber 2 parasitic solar fields and will be connected by a buried medium-voltage interconnection line to the existing Heber 1 Geothermal Facility. The proposed Project site encompasses 127 acres of private land with two proposed generation interconnection transmission lines. The Project is depicted in Section 33, Township 16 South, Range 14 East, and Section 3, Township 17 South, Range 14 East on the Heber, CA topographic quadrangle (see attached map). The project is subject to compliance with the California Environmental Quality Act.

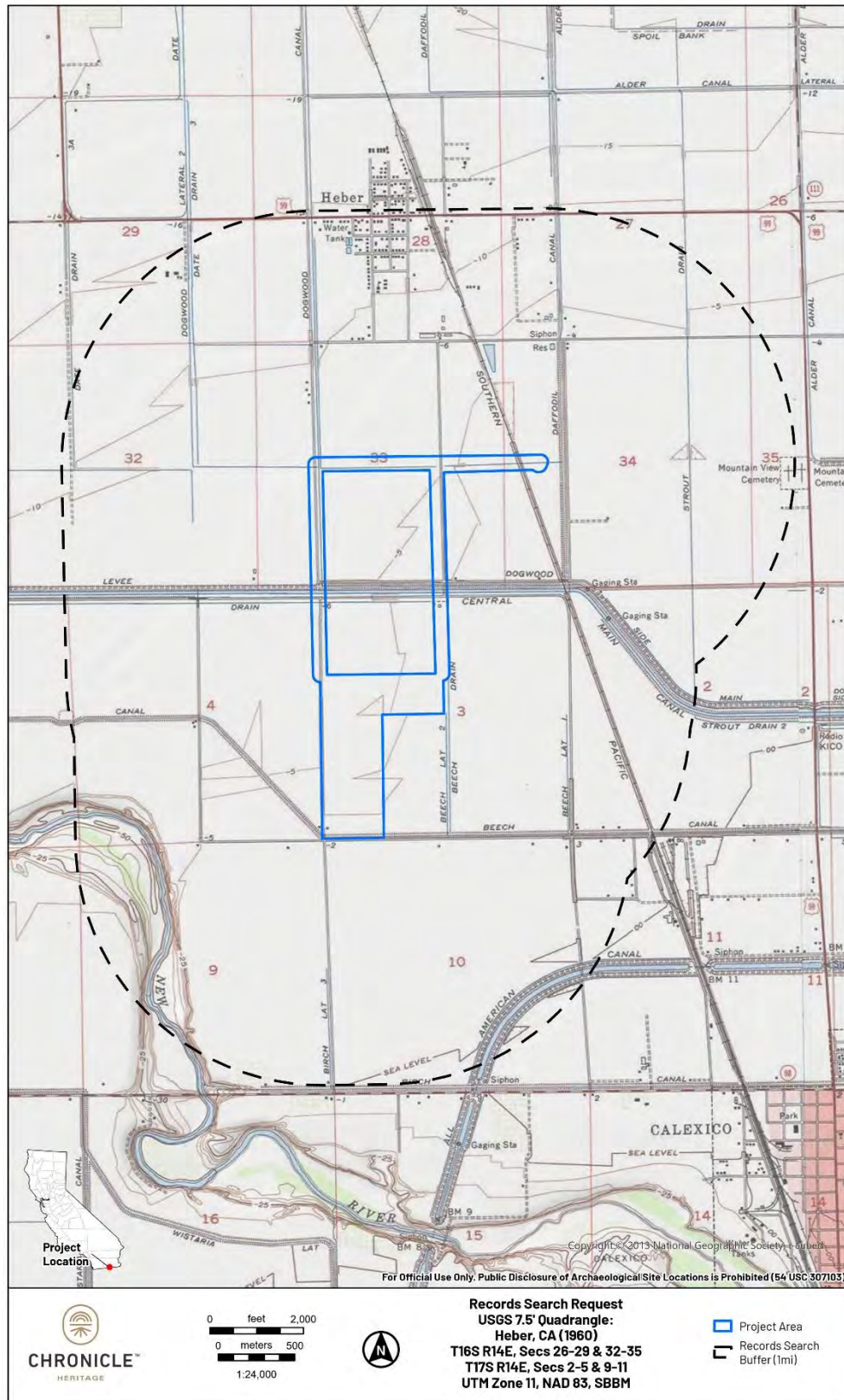
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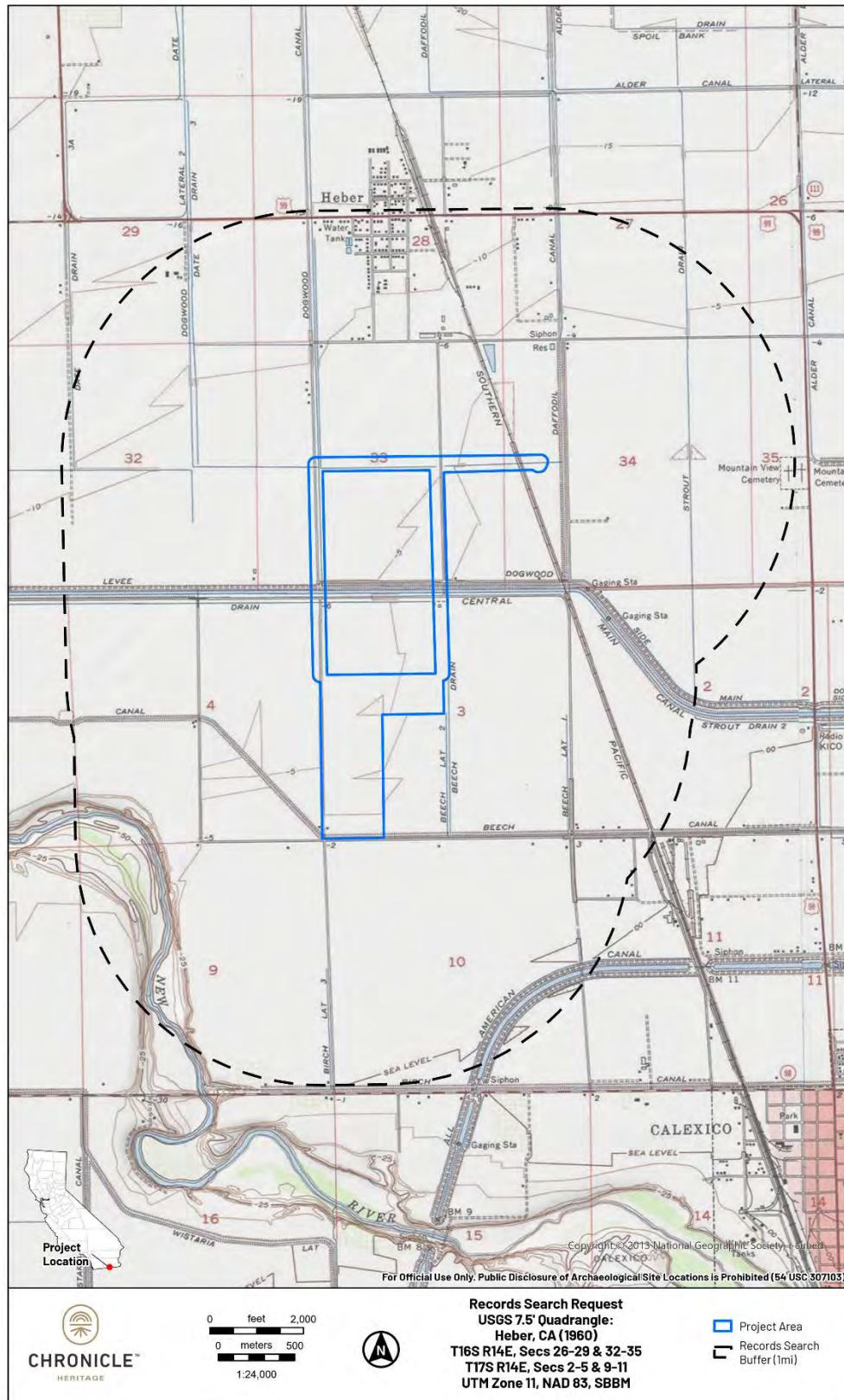
If you have knowledge of traditional cultural resources that may exist within or near the Project area shown on the enclosed map, please contact me by email at tcclark@chronicleheritage.com or by telephone at (310) 210-9884. We appreciate any information you can provide.

Sincerely,

Tiffany Clark, PhD, RPA
Regional Principal Archaeologist







Native American Contact/Response Matrix				
Recommended Contacts (Name and Tribal Affiliation)	Contact Info	Initial Contact	Follow up Attempts	Comments/Notes
Barona Group of the Capitan Grande Raymond Welch, Chairperson	1095 Barona Road Lakeside, CA, 92040 Phone: (619) 443 - 6612 Fax: (619) 443-0681 counciloffice@barona-nsn.gov mnavarro@barona-nsn.gov Manuel Navarro handles cultural issues	Letter sent via email 11/7/2023	Called 11/20/23	No response received.
Campo Band of Diegueno Mission Indians Ralph Goff, Chairperson Marcus Cuero, Chairperson	36190 Church Road, Suite 1 Campo, CA, 91906 Phone: (619) 478 - 9046 Fax: (619) 478-5818 rgoff@campo-nsn.gov	Letter sent via email 2/28/23; Email returned and letter sent via USPS on 11/8/23	N/A	Daniel Tsosie, Cultural Resource Manager for the Campo Band of Mission Indians, emailed on 11/16/23 and stated that the Campo Band had concerns regarding the Project. The Project area is within or adjacent to Kumeyaay travel/migration/ and trade routes. Mr. Tsosie requested a Native American Monitor be present during public surveys, soils testing, and during ground disturbance. He also requested that Campo Band is included be included in the treatment and monitoring plan.
Cocopah Indian Reservation Jill McCormick, Cultural Resources Manager	14515 S. Veterans Drive Sommerton, AZ, 85350 Phone: (928) 722 - 7521 mccormickj@cocopah.com	Letter sent via email 11/7/2023	Called 11/20/23	No response received.
Ewiiapaayp Band of Kumeyaay Indians Robert Pinto, Chairperson	4054 Willows Road Alpine, CA 91901 ceo@ebki-nsn.gov	Letter sent via email 11/7/2023	N/A	No response received.
Ewiiapaayp Band of Kumeyaay Indians Michael Garcia, Vice Chairperson	4054 Willows Road Alpine, CA 91901 michaelg@leaningrock.net	Letter sent via email 11/7/2023	N/A	No response received.
Iipay Nation of Santa Ysabel Virgil Perez, Chairperson Bernice Paipa, Chairperson	P.O. Box 130 Santa Ysabel, CA 92070 Phone: (760) 765 - 0845 Fax: (760) 765-0320 mhuesca@iipaynation-nsn.gov bpaipa@iipaynation-nsn.gov	Letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
Iipay Nation of Santa Ysabel Clint Linton, Director of Cultural Resources	P.O. Box 507 Santa Ysabel, CA 92070 Phone: (760) 803 - 5694 clint@redtailenvironmental.com	Letter sent via email 11/8/23	Called 11/20/23	No response received.

Native American Contact/Response Matrix				
Inaja-Cosmit Band of Indians Rebecca Osuna, Chairperson	2005 S. Escondido Blvd. Escondido, CA, 92025 Phone: (760) 737 - 7628 Fax: (760) 747-8568 inaja_cosmit@hotmail.com	Letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
Jamul Indian Village Erica Pinto, Chairperson	P.O. Box 612 Jamul, CA 91935 Phone: (619) 669 - 4785 Fax: (619) 669-4817 epinto@jiv-nsn.gov	Letter sent via email on 11/7/23	N/A	Email received on 11/7/2023 stating that the Jamul Indian Village defers to tribes closer to the Project.
Jamul Indian Village Lisa Cumper, Tribal Historic Preservation Officer	P.O. Box 612 Jamul, CA 91935 Phone: (619) 669 - 4855 lcumper@jiv-nsn.gov	Letter sent via email on 11/7/23	N/A	See response above.
Kwaaymii Laguna Band of Mission Indians Carmen Lucas	P.O. Box 775 Pine Valley, CA, 91962 Phone: (619) 709 - 4207	Letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
La Posta Band of Diegueno Mission Indians Gwendolyn Parada, Chairperson	8 Crestwood Road Boulevard, CA 91905 LP13boots@aol.com	Letter sent via email on 11/7/23	Called 11/20/23	No response received.
La Posta Band of Diegueno Mission Indians Javaughn Miller, James Hill, Tribal Administrator	8 Crestwood Road Boulevard, CA 91905 Phone: (619) 478 - 2113 Fax: (619) 478-2125 jmiller@LPtribe.net	Letter sent via email 11/7/23; email returned and letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
Manzanita Band of Kumeyaay Nation Angela Elliott Santos, Chairperson	P.O. Box 1302 Boulevard, CA 91905 Phone: (619) 766 - 4930 Fax: (619) 766-4957 ljbirdsinger@aol.com	Letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
Mesa Grande Band of Diegueno Mission Indians Michael Linton, Theresa Hernandez, Chairperson	P.O Box 270 Santa Ysabel, CA 92070 Phone: (760) 782 - 3818 Fax: (760) 782-9092 mesagrandeband@msn.com	Letter sent via email 11/7/23; email returned and letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
Quechan Tribe of the Fort Yuma Reservation H. Jill McCormick, Historic Preservation Officer	P.O. Box 1899 Yuma, AZ 85366 Phone: (760) 572 - 2423 historicpreservation@quechantribe.com	Letter sent via email on 11/7/23	Called 11/20/23; Phone line disconnected	Ms. McCormick is no longer Historic Preservation Officer, and Chairman Scott is acting in this role currently (see contact info below).

Native American Contact/Response Matrix				
Quechan Tribe of the Fort Yuma Reservation Manfred Scott, Acting Chairman Kw'ts'an Cultural Committee	P.O. Box 1899 Yuma, AZ 85366 Phone: (928) 750 - 2516 scottmanfred@yahoo.com; culturalcommittee@quechantribe.com	Letter sent via email on 11/7/23	Called 11/20/23	Spoke to Chairman Scott on 11/20/23 who stated he was planning to do a site visit, but was unable to make it out to the site as of yet. He intends to do the site visit soon and will reach out to Dr. Clark if he has any comments or questions.
San Pasqual Band of Diegueno Mission Indians Allen Lawson, Desiree Morales-Whitman, Chairperson	P.O. Box 365 Valley Center, CA, 92082 Phone: (760) 749 - 3200 Fax: (760) 749-3876 allenl@sanpasqualtribe.org; desireem@sanpasqualtribe.org	Letter sent via email 11/7/23; Email returned and letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
San Pasqual Band of Diegueno Mission Indians Steven Cope, Spokesperson	P.O. Box 365 Valley Center, CA, 92082 Phone: (760) 749 - 3200 Fax: (760) 749-3876 stevenc@sanpasqualtribe.org	Letter sent to new contact on 11/20/23	Called 11/20/23	No response received.
San Pasqual Band of Diegueno Mission Indians John Flores, Environmental Coordinator	P. O. Box 365 Valley Center, CA 92082 Phone: (760) 749 - 3200 Fax: (760) 749-3876	Letter sent via email on 11/7/23	Called 11/20/23	No response received.
Sycuan Band of the Kumeyaay Nation Kristie Orosco, Kumeyaay Resource Specialist	1 Kwaaypaay Court El Cajon, CA, 92019 Phone: (619) 445 - 6917	Letter sent via USPS on 11/8/23	N/A	See response below.
Sycuan Band of the Kumeyaay Nation Cody Martinez, Chairperson	1 Kwaaypaay Court El Cajon, CA, 92019 Phone: (619) 445 - 2613 Fax: (619) 445-1927 ssilva@sycuan-nsn.gov Alexis Vargas at avargas@sycuan-nsn.gov	Letter sent via email on 11/7/23	N/A	On 11/14/2023, Bernice Paipa resspoded via email on behalf of Chairperson Martinez. Ms. Paipa stated that the Sycuan Cultural Resource Center has consulted their maps and determined the project described is not within the boundaries of the recognized Sycuan Indian Reservation. However, they have determined it is within the boundariesof the Kumeyaay Nation's traditional territory. Imperial County is the homeland to the Kumeyaay Nation and the Sycuan have ancestral ties to this area as well as a historical, cultural, spiritual and religious interest. The Sycuan requested a time to meet and discuss the cultural and archaeological reports and the impact this project will have on the area. In addition, Ms. Paipa requested that Kumeyaay Monitors also be requested during any ground disturbance and surveys.
Torres-Martinez Desert Cahuilla Indians Cultural Committee,	P.O. Box 1160 Thermal, CA, 92274 Phone: (760) 397 - 0300 Fax: (760) 397-8146 Cultural-Committee@torresmartineznsn.gov	Letter sent via email on 11/7/23; email returned and letter sent via USPS on 11/8/23	Called 11/20/23	No response received.

Native American Contact/Response Matrix				
Viejas Band of Kumeyaay Indians John Christman, Chairperson	1 Viejas Grade Road Alpine, CA, 91901 Phone: (619) 445 - 3810 Fax: (619) 445-5337	Letter sent via USPS on 11/8/23	Called 11/20/23	No response received.
Viejas (Baron Long) Group of Capitan Grande of Mission Indians of the Viejas Reservation Ray Teran	1 Viejas Grade Road Alpine, CA 91901 Phone: (619) 445-3810 Fax: (619) 445-5337	Letter sent to new contact on 11/20/23	Called 11/20/23	Ray Teran of the Viejas Band of Kumeyaay Indians (Viejas) responded via email on 11/20/2023 and stated that he had reviewed the letter and determined that the Project site has cultural significance or ties to Viejas. Mr. Teran noted that resources have been located within or adjacent to the proposed Project area. He requested that a Kumeyaay Cultural Monitor be on site for ground disturbing activities and asked to be informed of any new developments such as inadvertent discovery of cultural artifacts, cremation sites, or human remains.
Viejas Band of Kumeyaay Indians Ernest Pingleton, Tribal Historic Officer, Resource Management	1 Viejas Grade Road Alpine, CA, 91901 Phone: (619) 659 - 2314 epingleton@viejas-nsn.gov	Letter sent via email on 11/7/2023	Called 11/20/23	Mr. Pingleton returned call on 11/20 and requested that a Kumeyaay monitor be present during ground disturbance activities for the Project.

Appendix C.

DPR Site Forms and Updates

CONTINUATION SHEET

Property Name: _____ Niland to Calexico Railroad

Page 1 of 1

The Niland to Calexico Railroad (P-13-008682) was initially recorded in 2003 by the Imperial Valley Desert Museum. The resource consists of an approximately 40-mile-long rail line that branches off the Southern Pacific Railway at Niland and extends in a roughly southerly direction to Calexico. It is composed of a standard gauge track on a gravel base. Constructed in 1903, the railroad connected the main Southern Pacific line with cities in Imperial County. By 1904, the line had been extended to Calexico. The line is still in use to transport goods from Mexico and the Imperial County to the rest of the United States.

In October 2023, Chronicle Heritage conducted a survey for the proposed Heber 1 Solar Project (Clark and Torres 2023). As part of the field work effort, a portion of the railroad north of Jasper Road between Ware Road and Pfizer Road (Sections 28 and 33, Township 16 South, Range 14 East) was revisited. The railroad consists of a single set of tracks resting on a gravel ballast (see photograph). The ballast is approximately 18 to 20 feet in width with the height of approximately 2 to 3 feet. A utility line consisting of single wooden pole runs along the eastern side of the railroad alignment. The tracks appear to be in good condition.



View of P-13-008682 between Ware and Pfizer Roads, facing north.

Reference: Clark, Tiffany, and Scott Torres (2023) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P-13-008682 UPDATE
HRI #
Trinomial CA-IMP-8166H UPDATE
NRHP Status Code

Other Listings
Review Code

Reviewer

Date

Page 1 of 5

*Resource Name or #: CA-IMP-8166H

P1. Other Identifier: Niland to Calexico Railroad

*P2. Location: ☒ Not for Publication ☐ Unrestricted

*a. County: Imperial

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: Niland Date: 1978 T 12S, R 14E; ¼ of ¼ of Sec 10; S.B.B.M.

c. Address:

City:

Zip:

d. UTM: NAD 83 Zone: 11; Western Wall (center point): 639073mE, 3668618mN

Eastern Wall (center point): 639089mE, 3668619mN

North end of rail update: 639081mE, 3668619mN

South end of rail update: 639098mE, 3667195mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
Resource CA-IMP-8166H is the Niland to Calexico Railroad, which was constructed between 1902 and 1904 by the Southern Pacific Company and runs 65 miles from Niland to Calexico. The resource was recorded in 2003 by Collins and Pflaum as a standard gauge track on a gravel base and is still in use today.

A portion of the Niland to Calexico Railroad (CA-IMP-8166H) was updated as part of this survey. (see continuation sheets)

*P3b. Resource Attributes: (List attributes and codes) AH7: Railroad grade; AH11: Wall

*P4. Resources Present: ☐ Building ☐ Structure ☐ Object ☒ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #) Culvert undercrossing – Eastern Wall, 9/ 14/ 11, view to the west, Photo# 011. (see continuation sheets for additional photos)

*P6. Date Constructed/Age and

Sources: ☒ Historic

☐ Prehistoric ☐ Both

*P7. Owner and Address:

Union Pacific Railroad

*P8. Recorded by: (Name, affiliation, and address)

C. Ehringer

ESA

626 Wilshire Blvd. Ste 1100

Los Angeles, CA

*P9. Date Recorded: 9/ 14/ 2011

*P10. Survey Type: (Describe)

Intensive pedestrian

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Collins, Karen and J. Michel Pflaum, Site Record for CA-IMP-8166H, document on file at South Coastal Information Center, 2003.

*Attachments: ☐ NONE ☒ Location Map ☒ Sketch Map ☒ Continuation Sheet ☐ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other (List):

DPR 523A (1/95)

*Required information

*Recorded by: C. Ehringer

*Date: 9/ 14/ 11

☒ Continuation

☐ Update

***P3a. Description:** CA-IMP-8166H, the Niland to Calexico railroad, crosses the westernmost portion of the project area. Dates painted on the rails in this area indicate that they were replaced from March 26-30, 1999. One new feature (Feature 1) of the railroad was recorded during the survey. Feature 1 consists of a culvert undercrossing at the intersection of Lindsey Road and the rail line. Rock and cement diversion walls bracket either side of a concrete pipe (48 inch diameter) that crosses under the rail line. The walls are composed of thin slabs of shale-like rock stacked horizontally on top of each other and held together by cement mortar. The walls are poorly constructed and appear to have been built in haste. The cement mortar contains small pebbles and is very friable. The wall on the western side of the railroad line is in disrepair and appears to have partially collapsed into the adjacent canal. The wall on the eastern side of the railroad line is in good condition. No dates of construction or other markings were observed in the cement.

Feature 1 - Western wall measurements:

Height: varies from 98.5 inches in north to 73 inches in south

Width: varies from 10 to 12 inches

Feature 1 - Eastern wall measurements:

Height: varies from 81 to 91 inches

Width: varies from 10 to 12 inches

P5a. Photo or Drawing:



P5b. Description of Photo: Feature 1, Western Wall, view to the east, Photo#2

*Recorded by: C. Ehringer

*Date: 9/ 14/ 11

☒ Continuation

☐ Update

P5a. Photo or Drawing:



P5b. Description of Photo: CA-IMP-8166H, portion of rails in project area, view to the south, Photo#7

P5a. Photo or Drawing:



P5b. Description of Photo: CA-IMP-8166H, date on rails, view to the west, Photo#15

LOCATION MAP

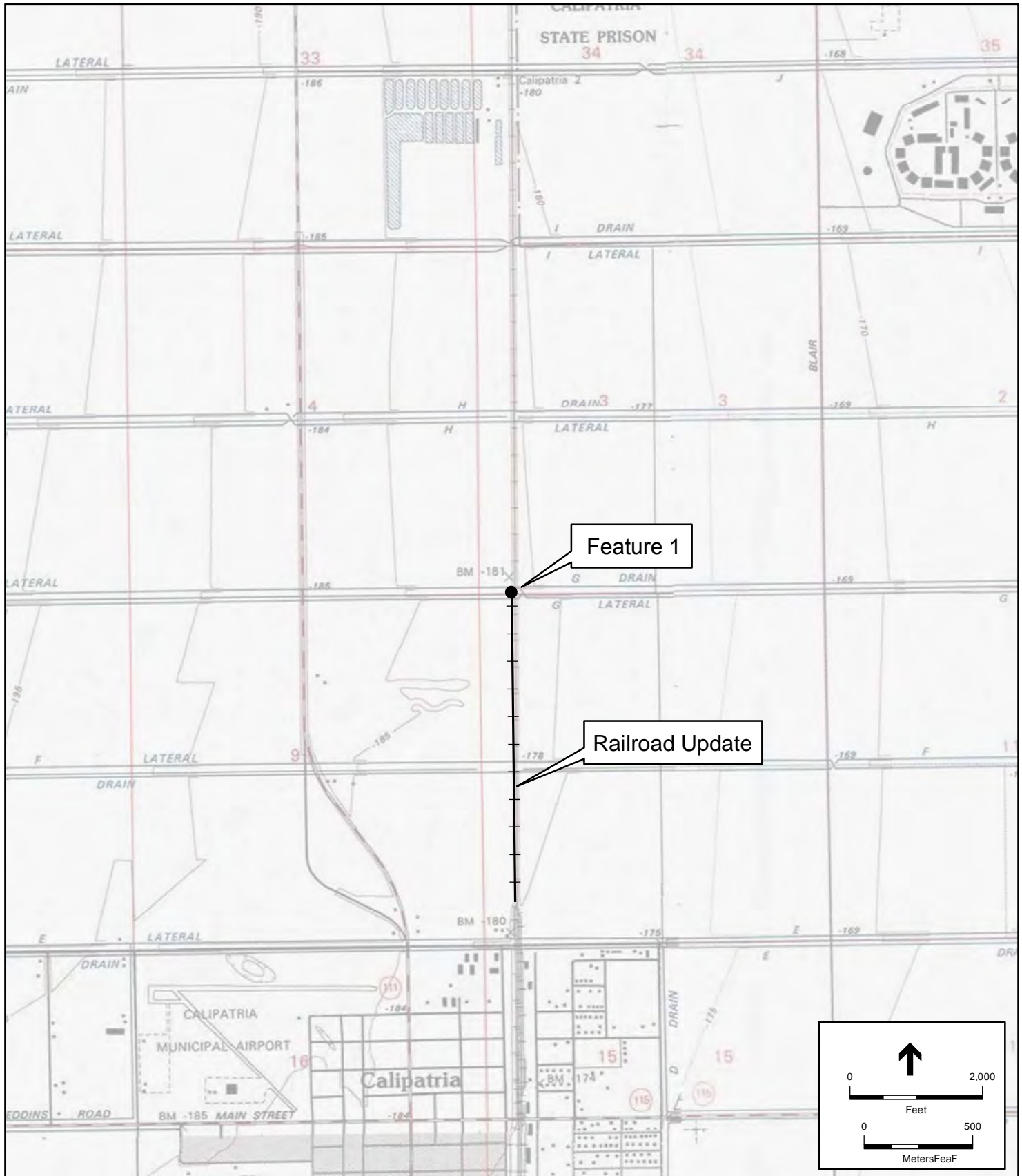
Trinomial: CA-IMP-8166H

Page 2 of 5

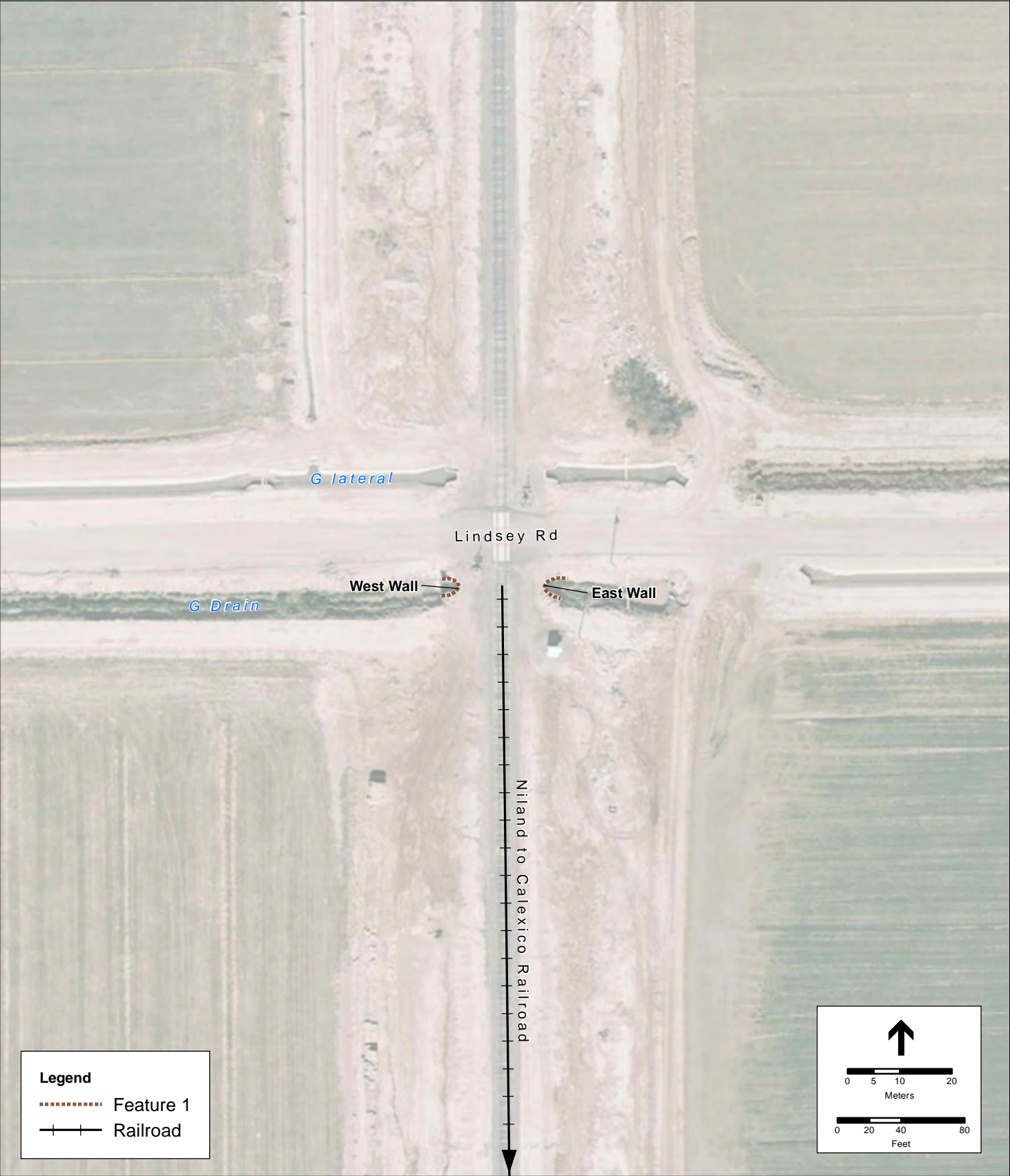
* Resource Name or Number: CA-IMP-8166H

*Map name: Niland

*Scale: 1:24000



SKETCH MAP



UPDATE

CONTINUATION SHEET

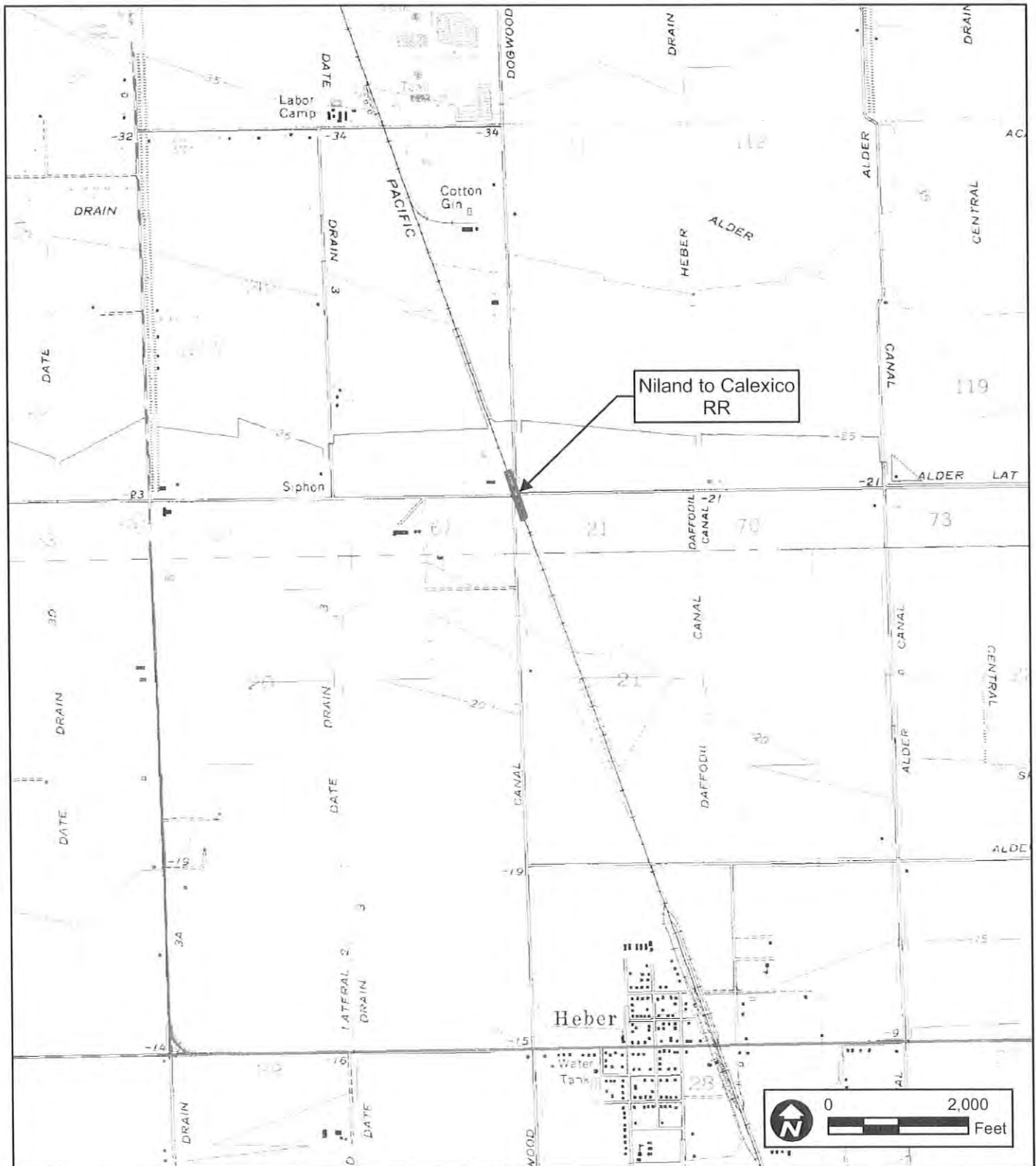
Trinomial CA-IMP-8166H

Page 1 of 3

*Resource Name or # (Assigned by recorder) Niland to Callexico RR

Recorded by Andrea C. Craft and Michael J. Wise Date 24 May 2005 ☐ Continuation ☒ Update

A small portion of the Niland to Callexico RR was field visited on 24 May 2005. A minor segment falls within the Area of Potentials Effects (APE) for the City and County of El Centro's project to widen Dogwood Road from one-half mile north of McCabe Road to the intersection with Correll Road. That portion crosses the APE for a length of 500 feet. The roadway project will not impact any of the railroad's features within the APE, which include at grade tracks, traffic control including gates, lights and bells, and a concrete base supported by metal pilings that suspends the track above the Dogwood Canal. Please see attached location and vicinity maps.

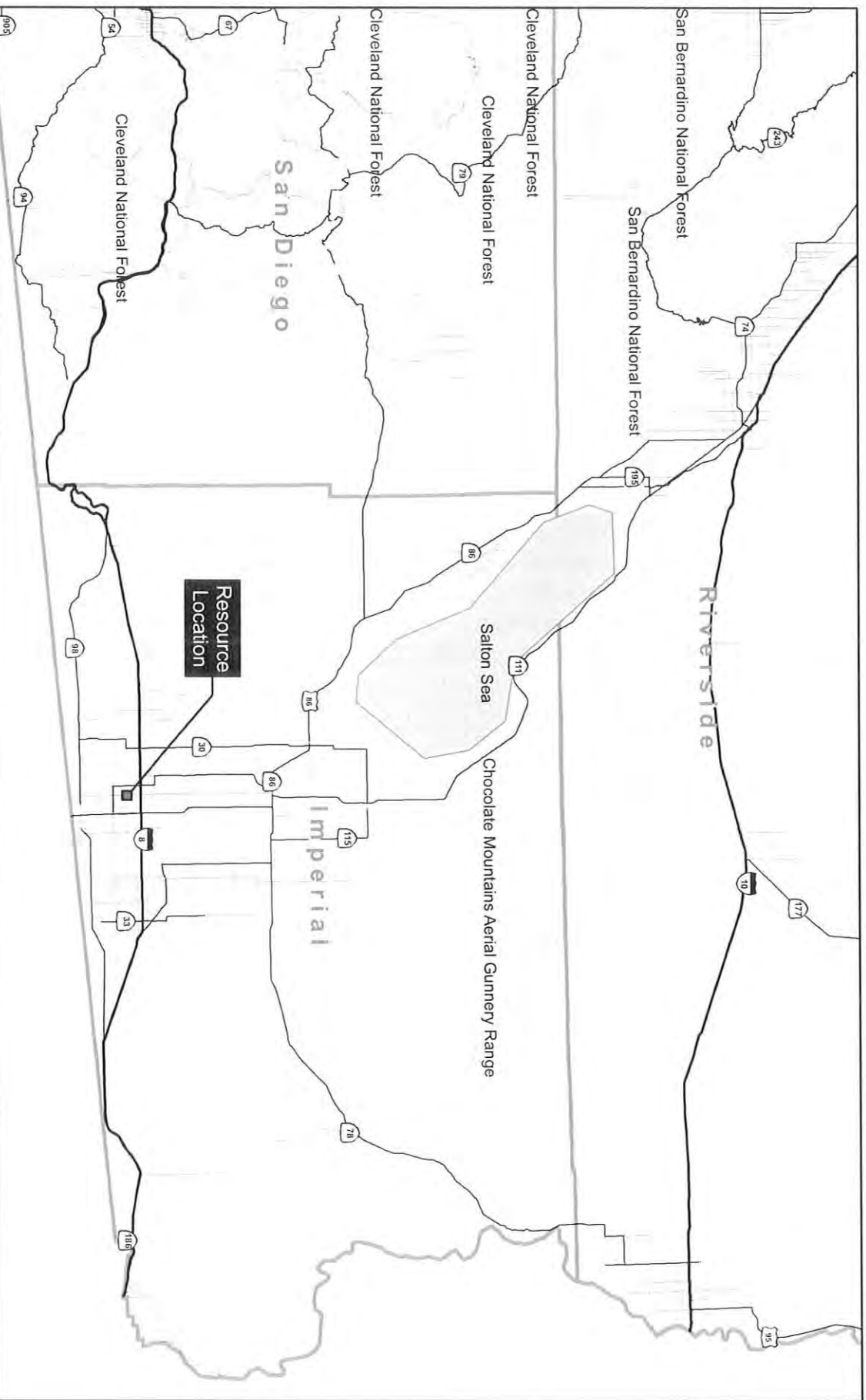


State of California - The Resource Agency
DEPARTMENT OF PARKS AND RECREATION
VICINITY MAP

Primary #: P-13-008682
Trinomial: CA-IMP-8166H

Page 3 of 3

Resource Name or #: Niland to Callexico RR



State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary# P-13-008682
HRI#
Trinomial CA-IMP-8166
NRHP Status Code

Other Listings

Review Code

Reviewer

Date

Page 1 of 27 *Resource Name or #: (Assigned by Recorder) Niland to Calexico RR

P1. Other Identifier: Southern Pacific Railroad (Imperial and Gulf Branch)

*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Imperial

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Date T ; R 14E 1/4 of 1/4 of Sec ; SBM B.M.

c. Address City Zip

d. UTM: (Give more than one for large and/or linear resources) Zone 11; mE/ mN

e. Other Locational Data: (e.g., parcel #, direction to resources, elevation, etc., as appropriate)
see continuation sheet

P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting and boundaries)

Railroad line connecting the main Southern Pacific line with the cities of Imperial County and Mexico. A standard gauge track on a gravel base. The Southern Pacific Company was petitioned by the people of Imperial Valley to construct a branch line running through the Valley from the main line. When the Southern Pacific failed to get construction of the branch underway promptly, local citizens purchased right of way and materials with the intention of doing the job themselves. This brought immediate action from the Southern Pacific. By February 1903, the branch line had been completed from Old Beach (now Niland) southerly to Imperial. By January 1904 it had been extended on to Calexico. The line is still in use transporting goods from Mexico and Imperial county to the rest of the US. The track runs from approximately Sea Level in Calexico to -125 in Niland in a north south direction, covers a distance of ca 65-km

*P3b. Resource Attributes: (List attributes and codes) AH7 roads/trains/ railroad grades

*P4. Resources Present: ☐ Building ☐ Structure ☐ Object ☒ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5. Description of Photo: (View, date, accession #)
See attached

*P6. Date Constructed/Age and Sources: ☒ Historic
☐ Prehistoric ☐ Both

*P7. Owner and Address:
Union Pacific Rail Road

*P8 Recorded by: (Name, address and affiliation)
Karen Collins, J. Michael Pflaum
IVC Desert Museum

*P9 Date Recorded:
*P10. Survey Type: (Describe)
Pedestrian and vehicular

*P11. Report Citation: (Cite survey report and other sources, or enter "none".) History of Imperial Irrigation District and the Development Of Imperial Valley by M. J. Dowd 1956 unpublished

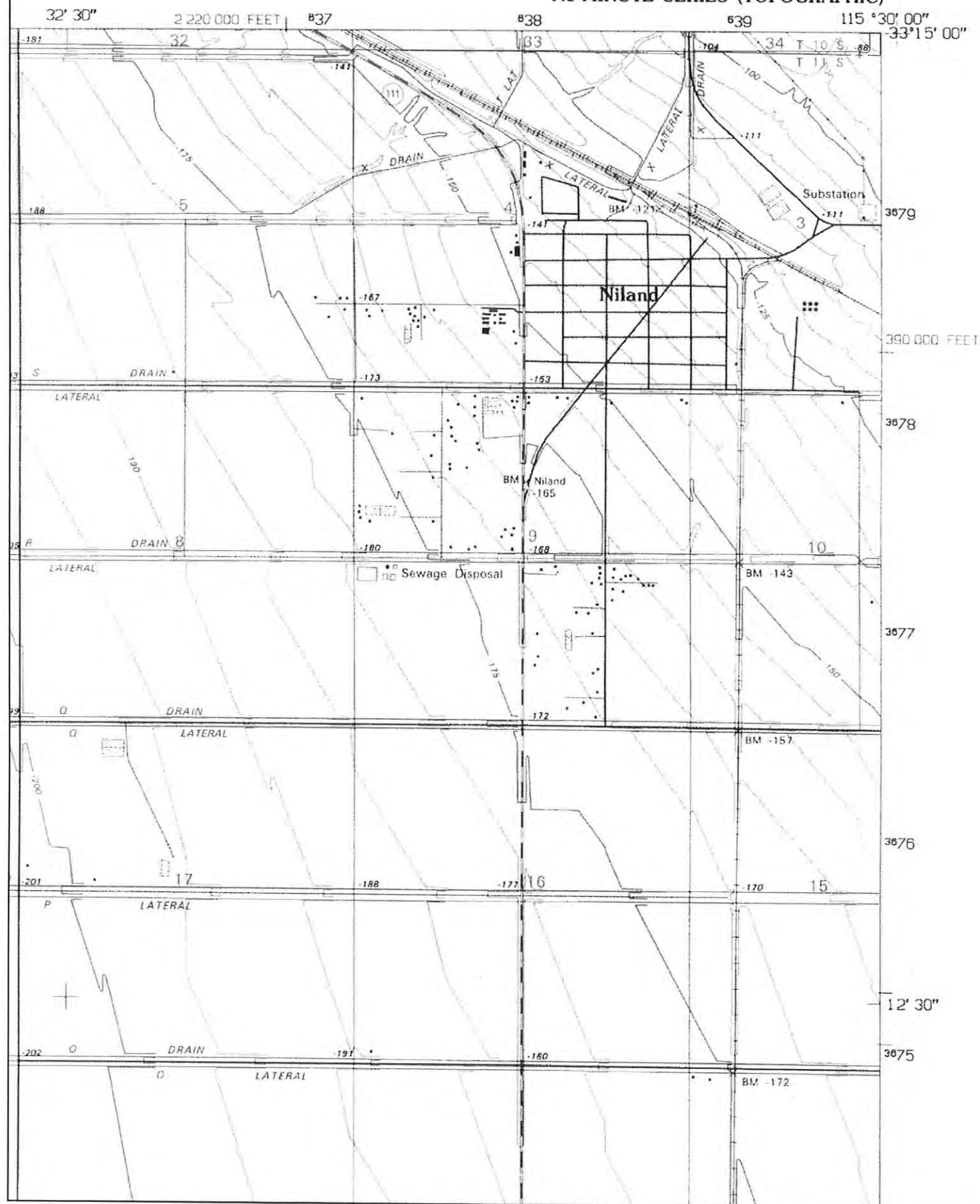
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☐ Archeological Record ☐ District Record ☒ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☒ Other (List) photo page

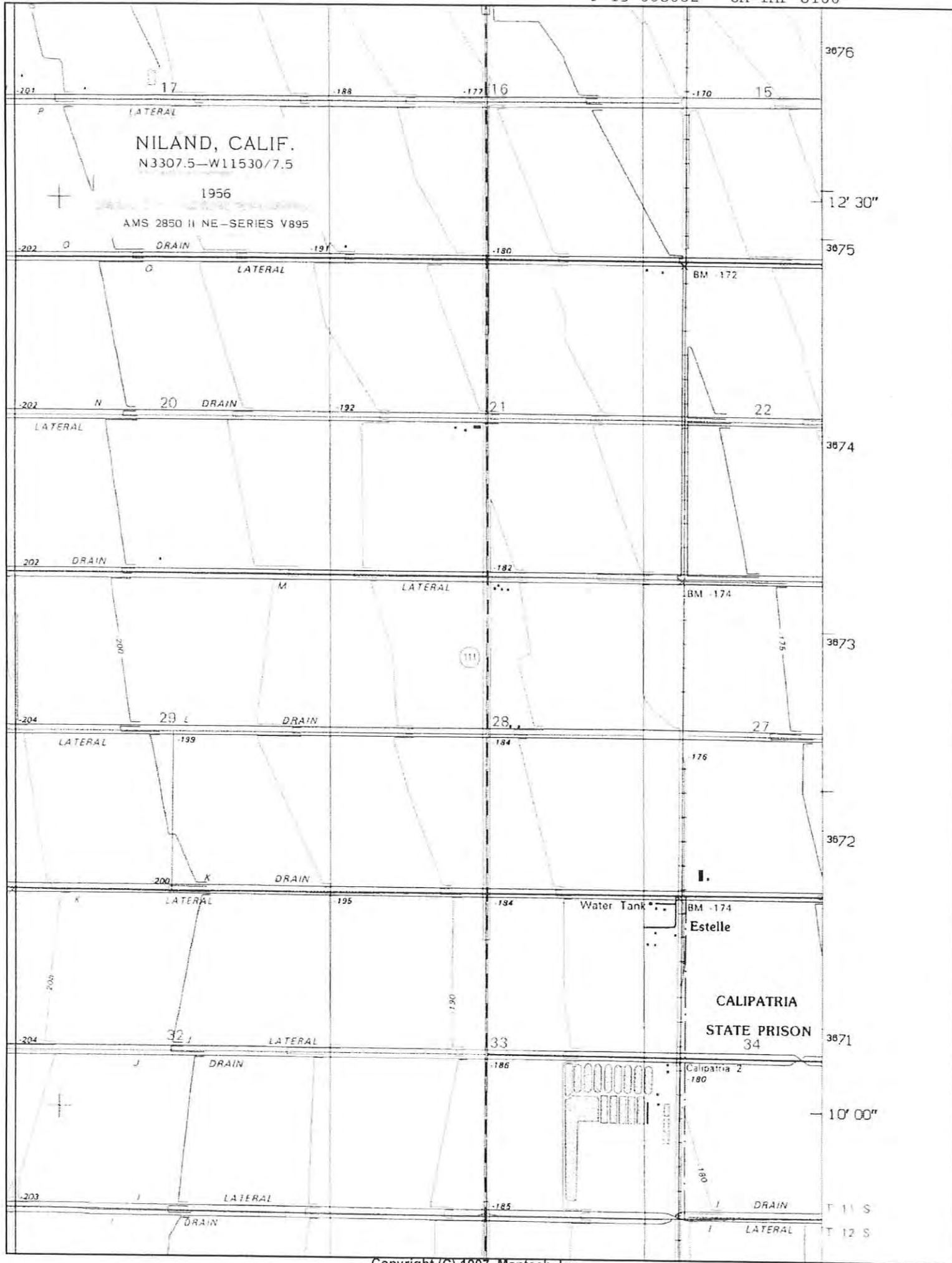
DPR 523A (1/95)

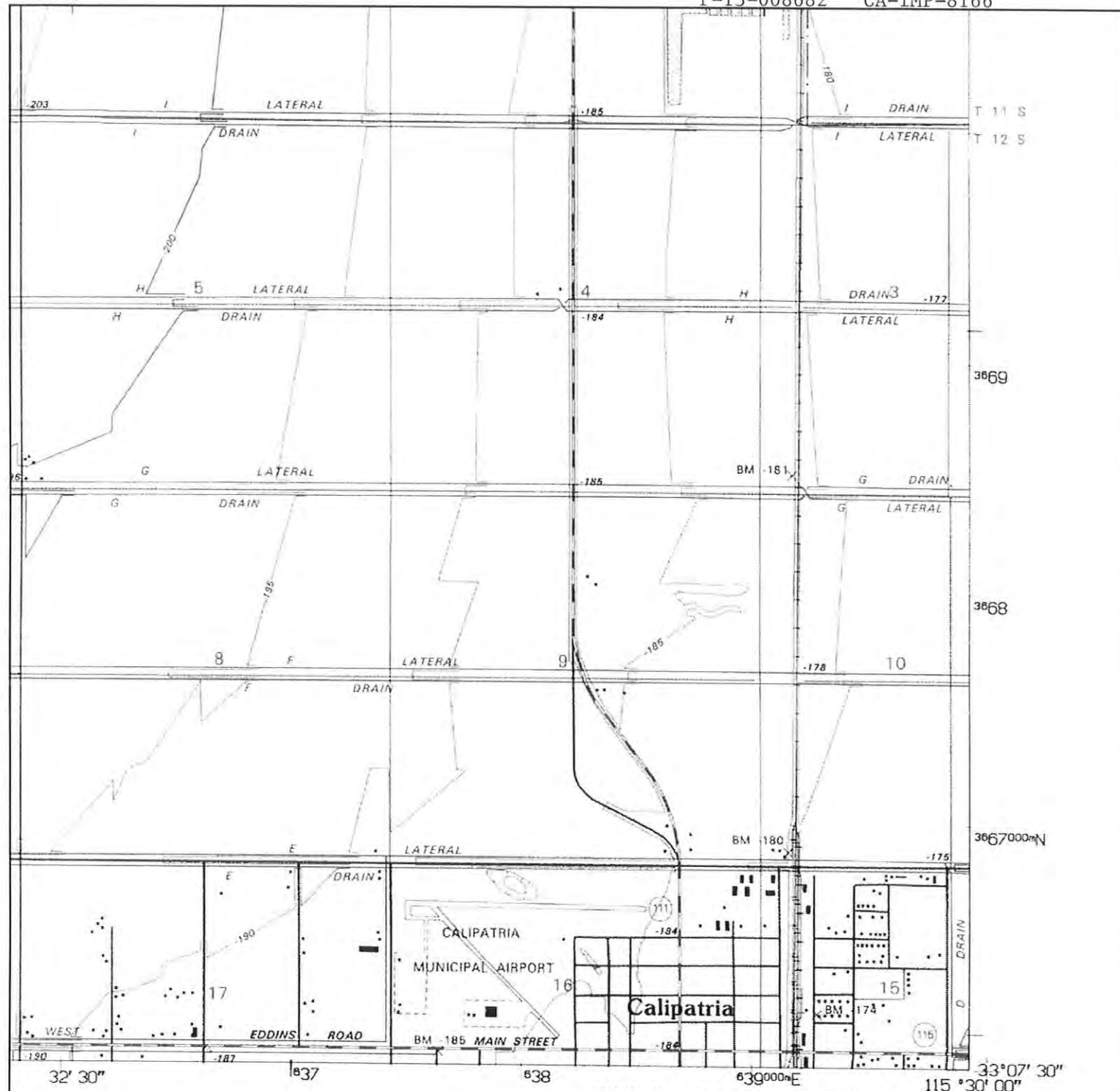
*Required Information

P-13-008682
CA-IMP-8166

NILAND QUADRANGLE
CALIFORNIA-IMPERIAL CO.
7.5-MINUTE SERIES (TOPOGRAPHIC)







INTERIOR - GEOLOGICAL SURVEY, RESTON, VIRGINIA - 1995

ROAD CLASSIFICATION

Primary highway Light-duty road, hard or
 hard surface improved surface
 Secondary highway Unimproved road

Interstate Route U.S. Route State Route

QUADRANGLE LOCATION

1	2	3	1 Frink
			2 Wister
			3 Iris Wash
4		5	4 Obsidian Butte
			5 Iris
			6 Westmorland West
6	7	8	7 Westmorland East
			8 Wiest

ADJOINING 7.5' QUADRANGLE NAMES

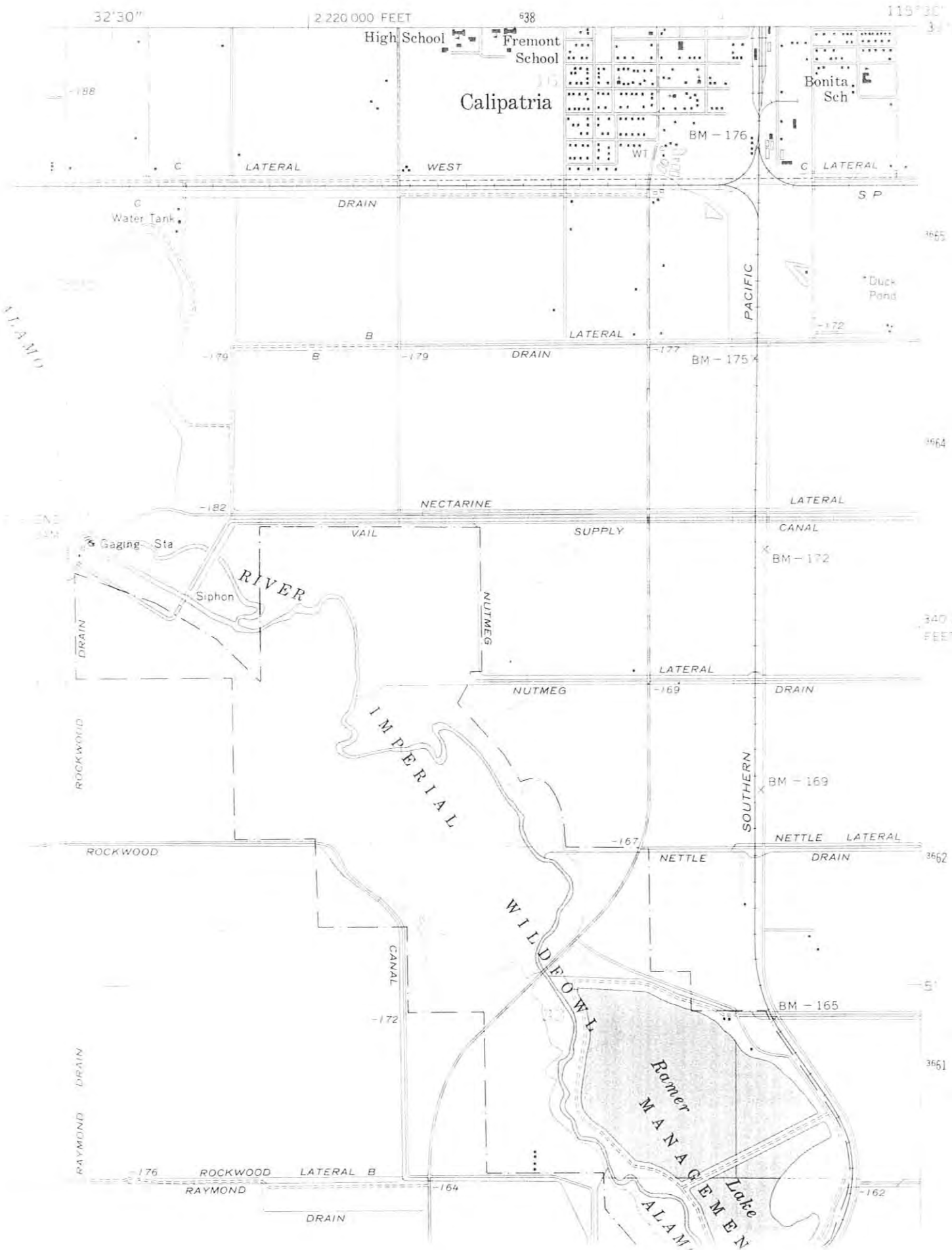
NILAND, CA
 33115-B5-TF-024

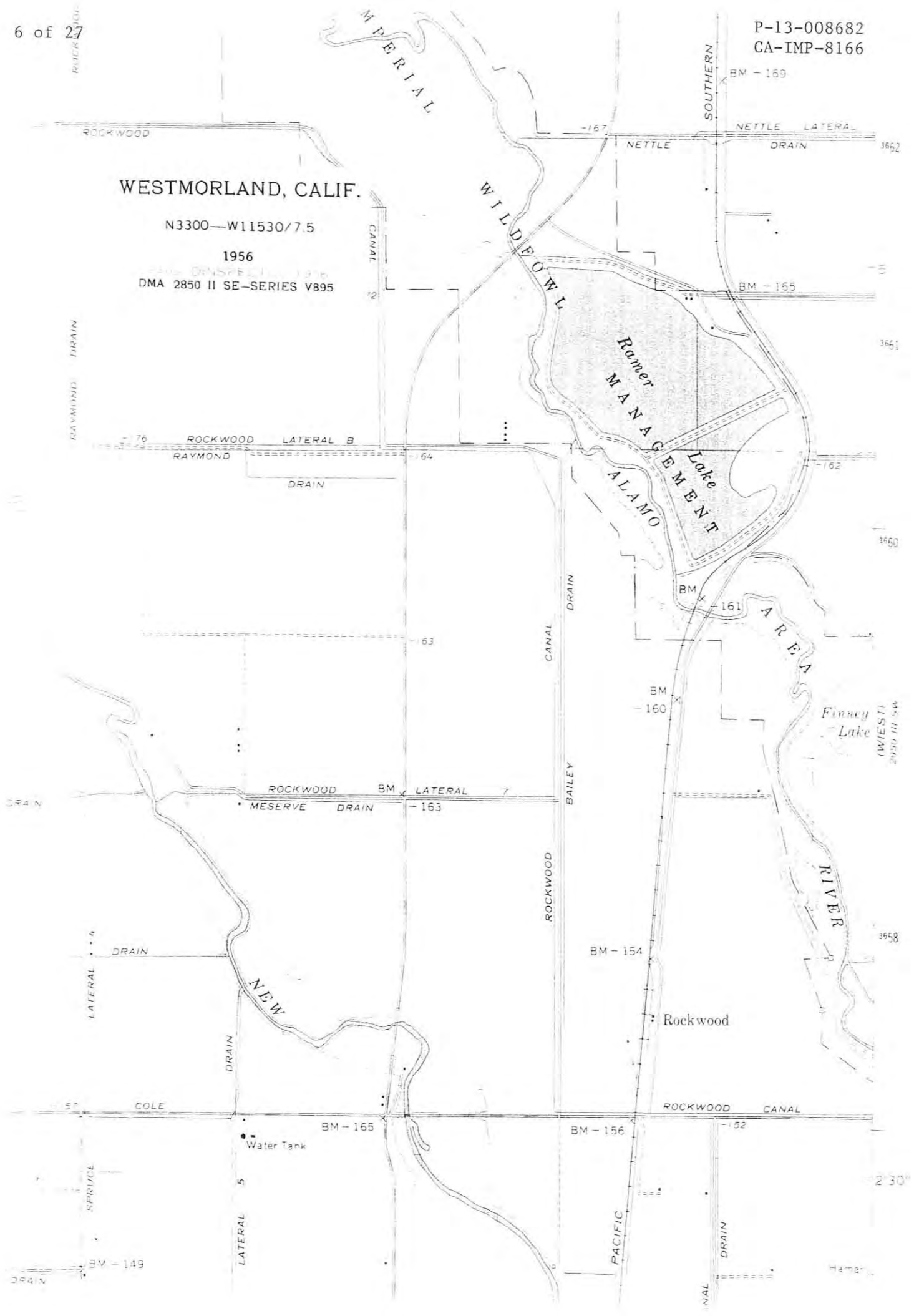
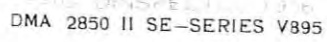
1992

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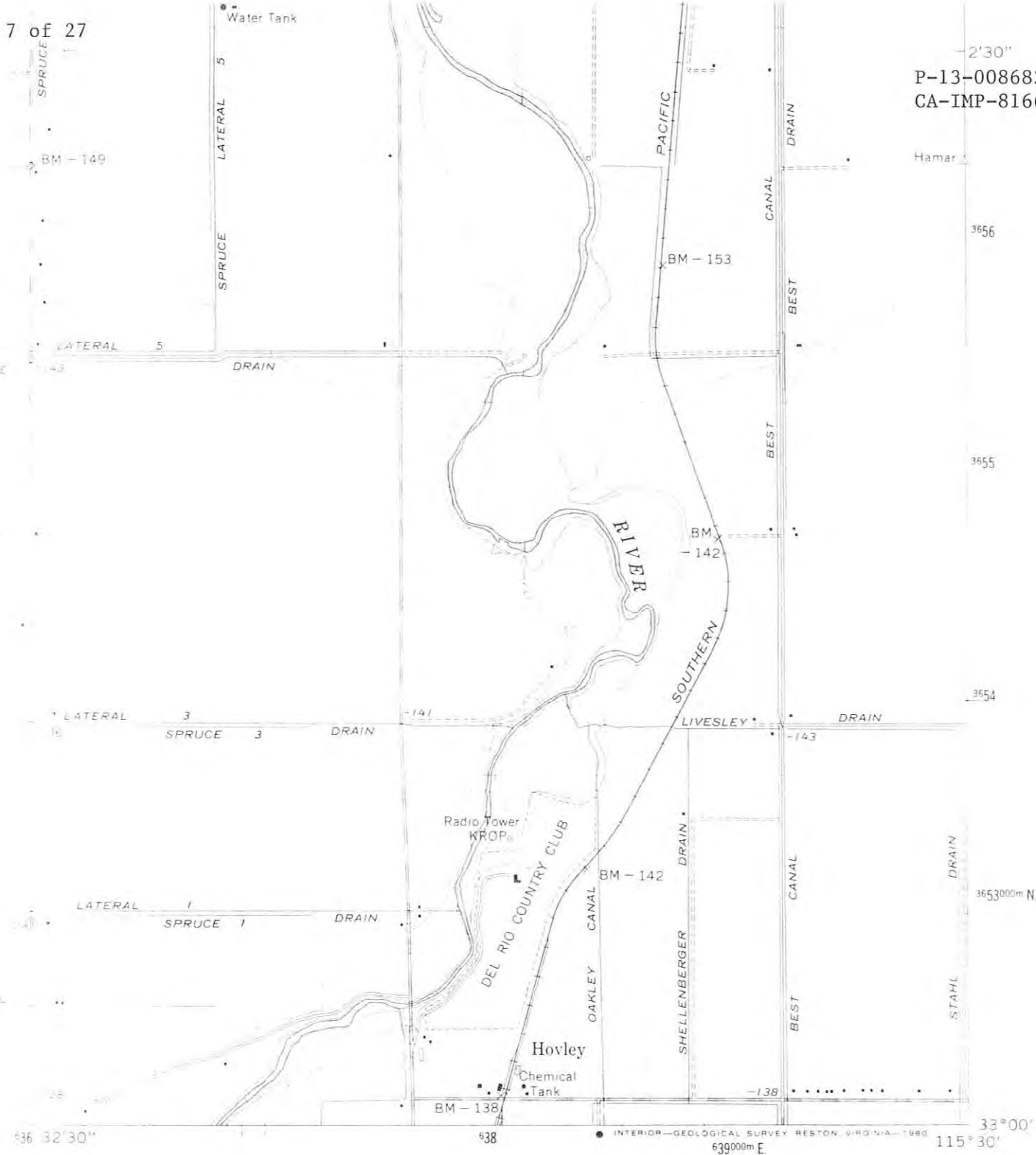


P-13-008682 CA-IMP-8166
WESTMORLAND QUADRANGLE
CALIFORNIA-IMPERIAL CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)





P-13-008682
CA-IMP-8166



ROAD CLASSIFICATION

Heavy-duty	—————	Light-duty	—————
Medium-duty	—————	Unimproved dirt	-----
U. S. Route		State Route	



WESTMORLAND, CALIF.

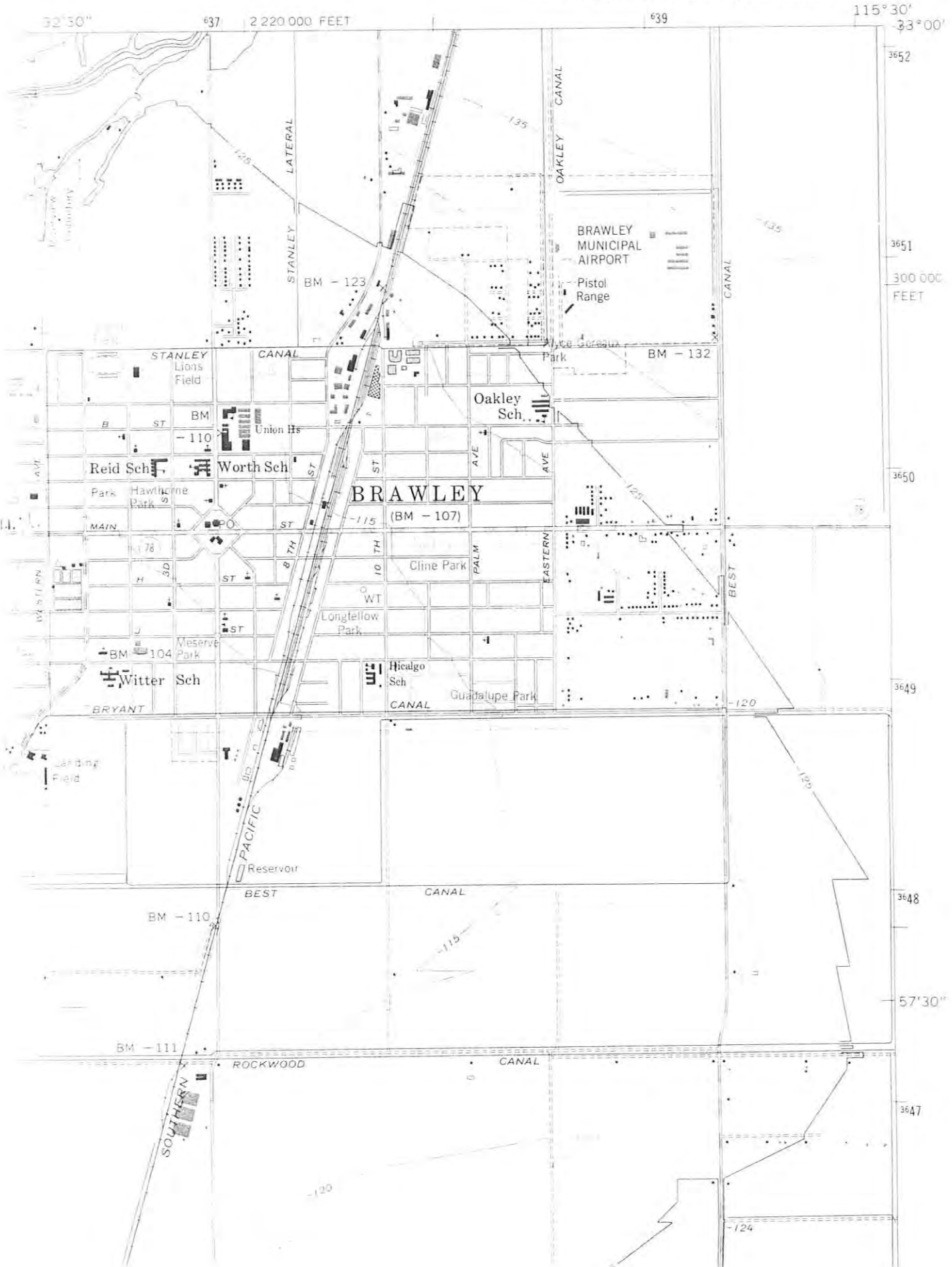
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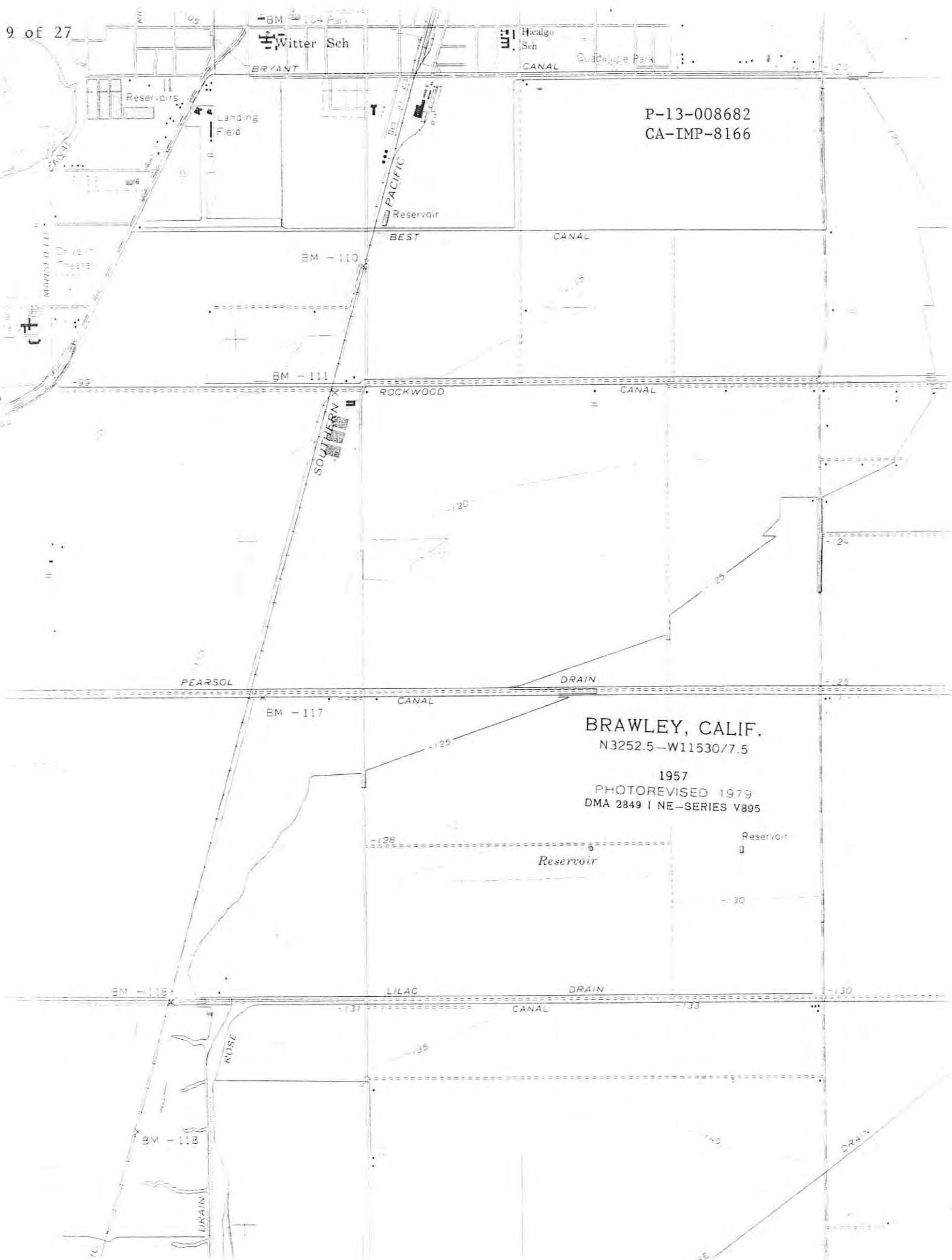
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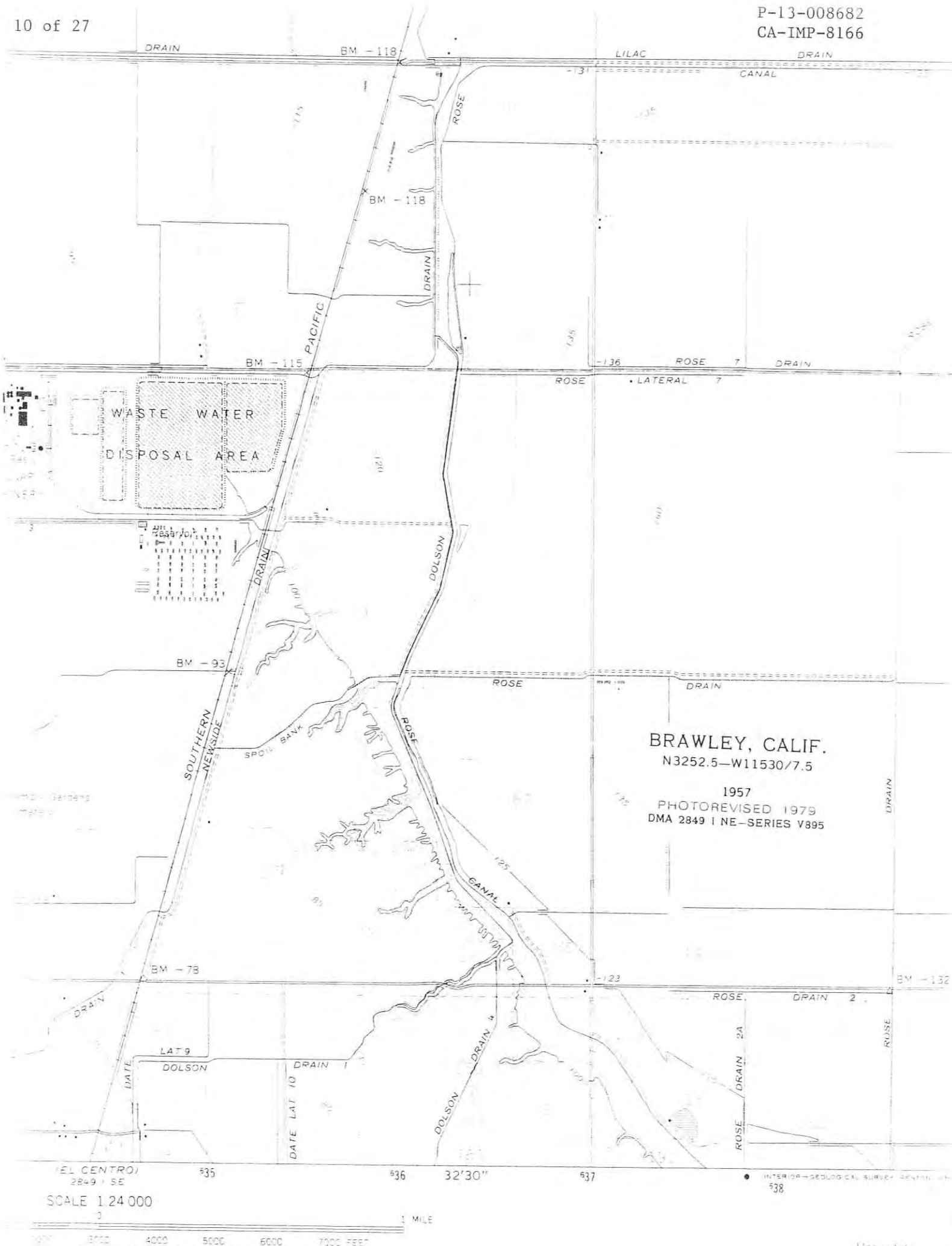
DMA 2850 II SE—SERIES V895

P-13-008682 CA-TMP-8166
BRAWLEY QUADRANGLE
CALIFORNIA—IMPERIAL CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

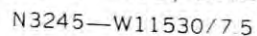
2950 III SW
(W1E57)



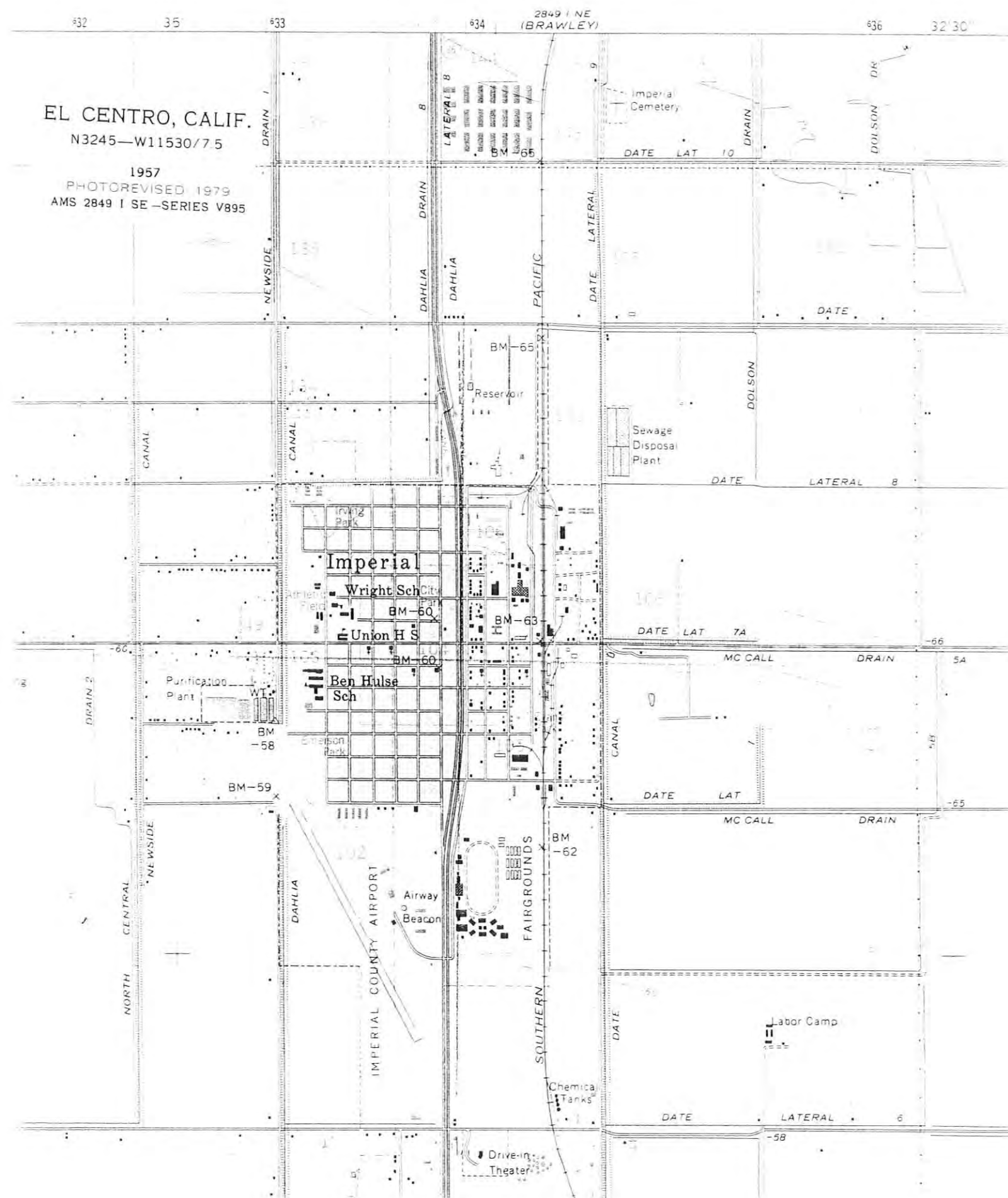




STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES



1957
PHOTOREVISED 1979
AMS 2849 I SE—SERIES V895



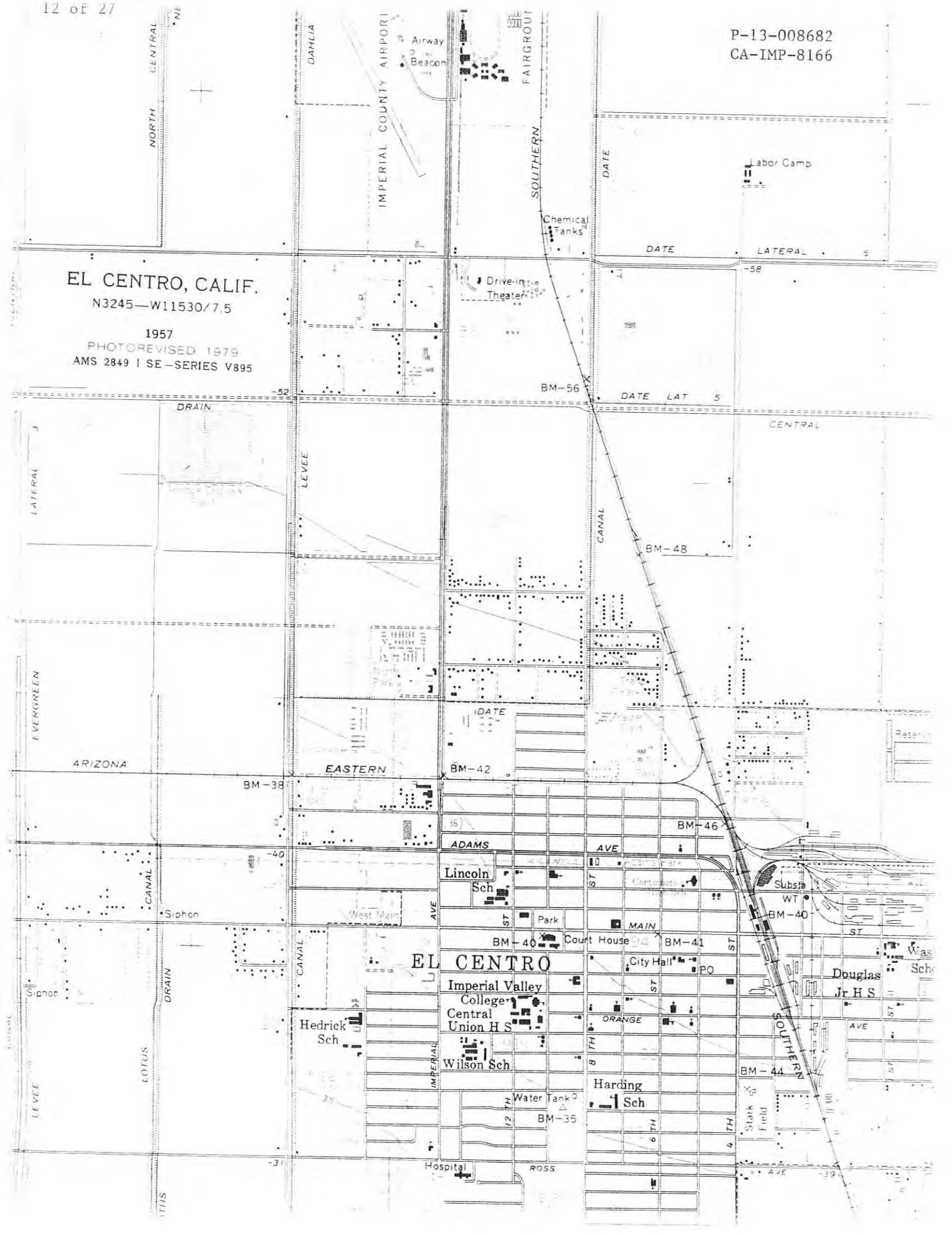
EL CENTRO, CALIF.

N3245—W11530/7.5

1957

PHOTOREVISED 1979

AMS 2849 I SE—SERIES V895



Washington School
Douglas Jr H S
Siphon
LANDING STRIP
ALDER
EVERGREEN CEMETERY
ALDER DRAIN 11
ALDER
ALACIA
P-13-008682
CA-IMP-8166



32°30' 637 640000m E 32°45' 115°30'

ROAD CLASSIFICATION
Heavy-duty Medium-duty U.S. Route
Light-duty Unimproved dirt State Route

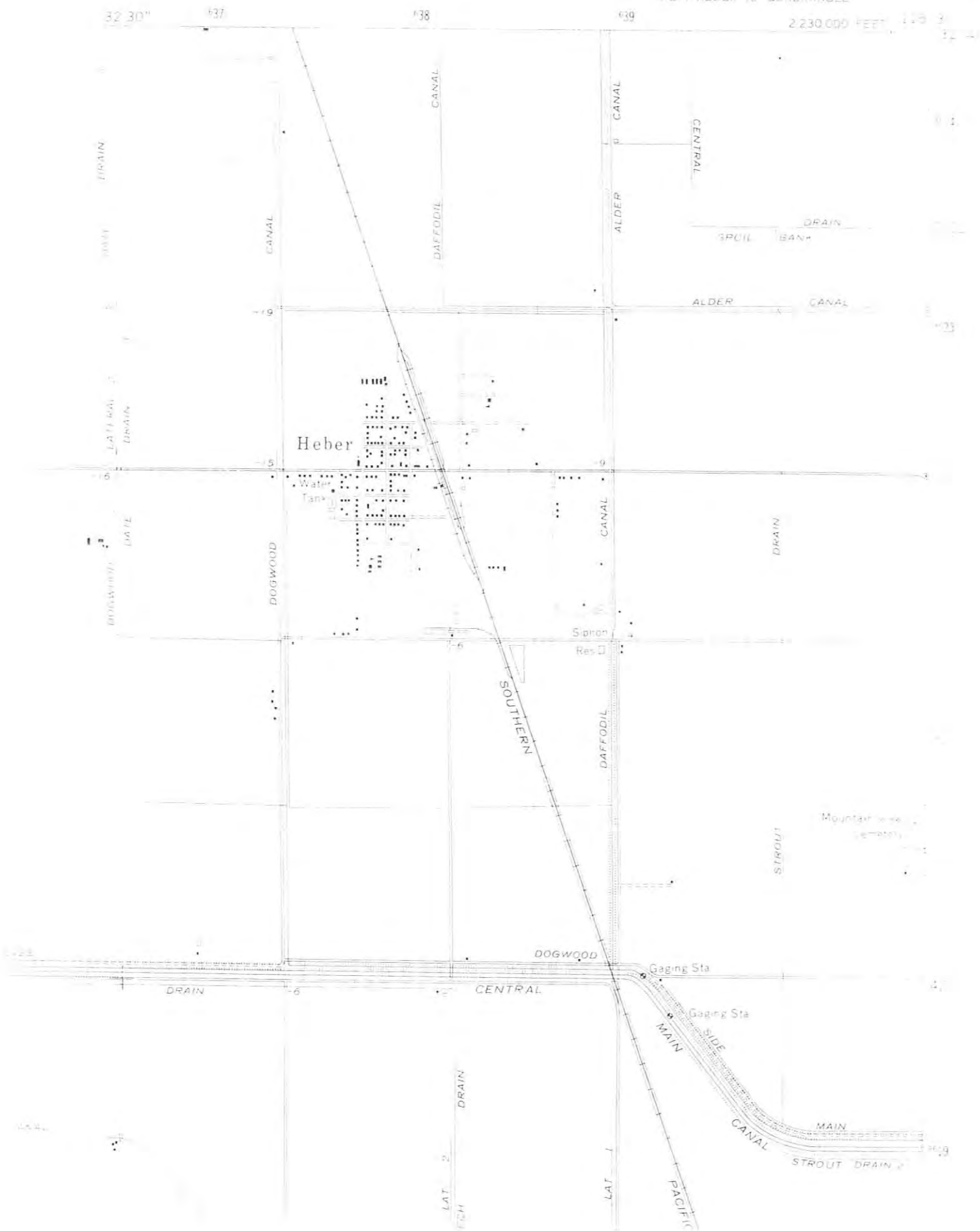


EL CENTRO, CALIF.
N3245—W11530/75

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AMS 2849 I SE—SERIES V893

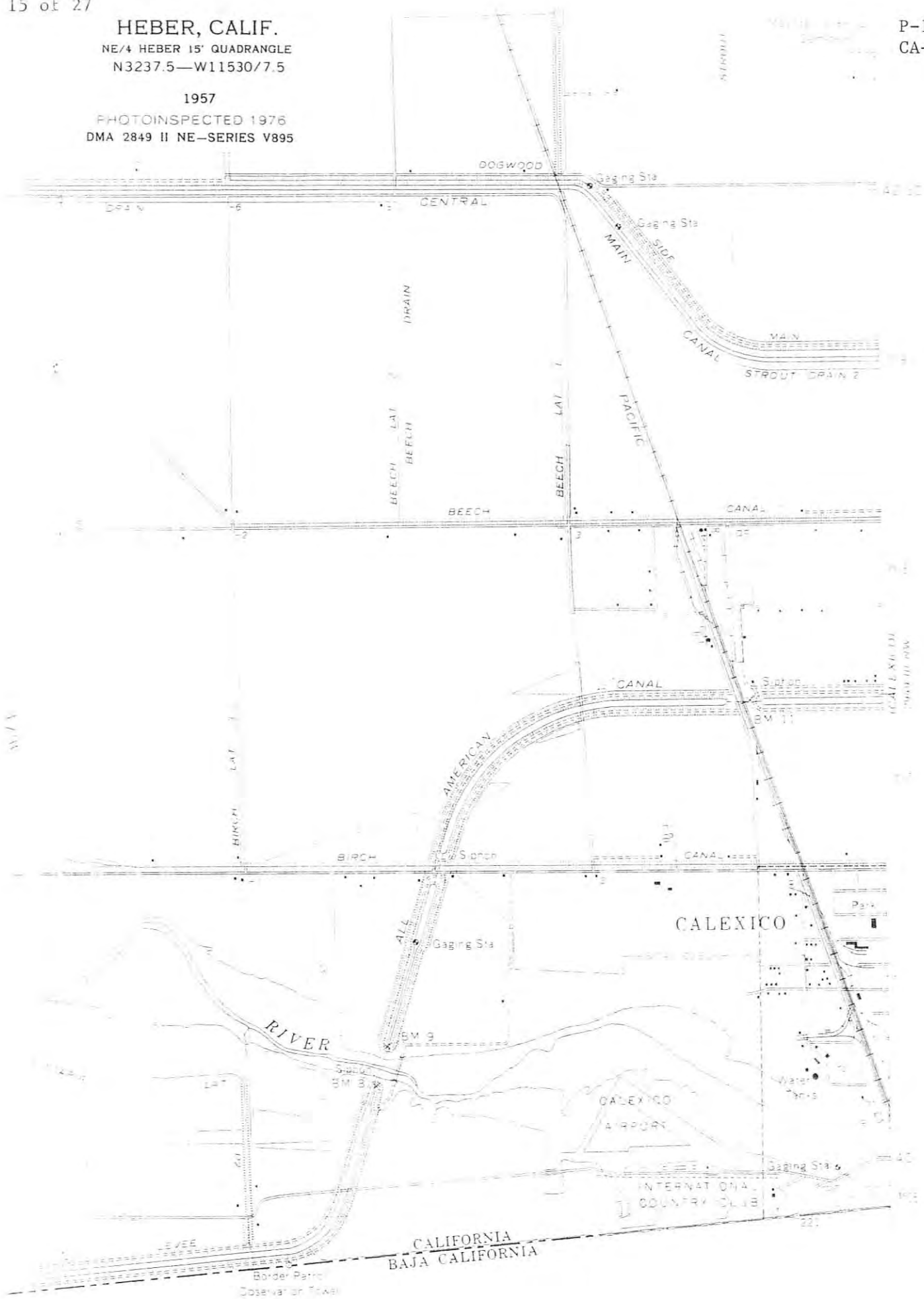
HEBER QUADRANGLE
CALIFORNIA-IMPERIAL CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

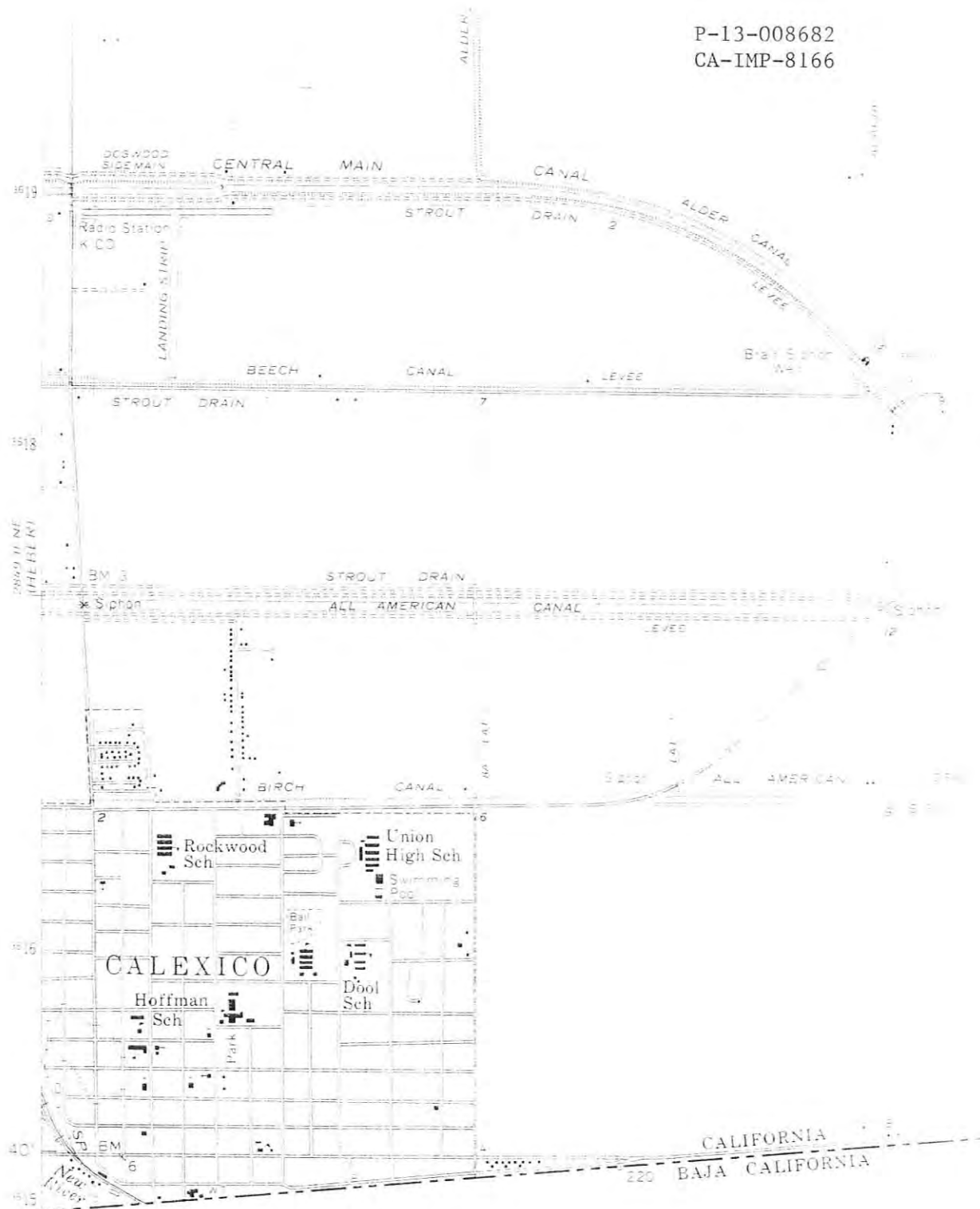
NE 4 HEBER 15' QUADRANGLE



1957

PHOTOINSPECTED 1976
DMA 2849 II NE-SERIES V895





CALEXICO, CALIF.

NW/4 CALEXICO 15' QUADRANGLE
N3237.5—W11522.5/7.5

1957

AMS 2949 III NW—SERIES V895

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
ARCHEOLOGICAL SITE RECORD

Primary# P-13-008682
Trinomial# CA-IMP-8166

Page 17 of 27

*Resource Name or # (Assigned by recorder) Niland to Calexico RR

*A1. Dimensions: a. Length 65m (NS) x b. Width 15-100m (EW)
Method of Measurement: ☐ Paced ☐ Taped ☒ Visual estimate ☐ Other:
Method of Determination (Check any that apply): ☐ Artifacts ☒ Features ☐ Soil ☐ Vegetation ☐ Topography
☐ Cut Bank ☐ Animal burrow ☐ Excavation ☒ Property Boundary ☐ Other Explain):

Reliability of Determination: ☒ High ☐ Medium ☐ Low Explain:

Limitations (Check any that apply): ☐ Restricted Access ☐ Paved/built over ☐ Site Limits incompletely defined
☐ Disturbances ☐ Vegetation ☐ Other (Explain):

A2. Depth: ☒ None ☐ Unknown Method of Determination:
*A3. Human Remains: ☐ Present ☒ Absent ☐ Possible ☐ Unknown (Explain):

*A4. Features (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):
Major sidings and structures shown on location maps.

*A5. Cultural Constituents (Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.):

*A6. Were Specimens Collected? ☒ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)

*A7. Site Condition: ☒ Good ☐ Fair ☐ Poor (Describe disturbances.):

*A8. Nearest Water (Type, distance, and direction.): Crosses the Alamo River

*A9. Elevation: Sea level to -125

A10. Environmental Setting (Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.): Most of the line is in agricultural land. Native vegetation is found along the Alamo river. Native plants include arrowweed, mesquite, creosote, bursage and paloverde. Soils are lake deposits from Lake Cahuilla.

A11. Historical Information: Transportation was a very serious problem in Imperial Valley in the early 1900's. All materials and supplies had to be freighted overland from the Southern Pacific railroad at Flowing Wells. There was a similar problem in the shipment of products grown in the Valley. The Southern Pacific Company was petitioned by the people of Imperial Valley to construct a branch

*A12. Age: ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☒ 1880-1914 ☒ 1914-1945
☐ Post 1945 ☐ Undetermined Describe position in regional prehistoric chronology or factual historic dates if known:
Line was constructed 1903-1904. While originally a passenger and freight line it is used only for freight today.

A13. Interpretations (Discuss data potential, function(s), ethnic affiliation, and other interpretations):

A14. Remarks:

A15. References (Documents, informants, maps, and other references): History of Imperial Irrigation District and the Development of Imperial Valley by M. J. Dowd, Reconnaissance map of the Salton Sink, CA 1908 reprinted 1931

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.):

Original Media/Negatives Kept at:

*A17. Form Prepared by: Karen M. Collins

Date: June 13, 2003

Affiliation and Address:

DPR523C (1/95)

*Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LINEAR FEATURE RECORD

Primary# P-13-008682

HRI#

Trinomial# CA-IMP-8166

Page 18 of 27

*Resource Name or # (Assigned by recorder) Niland to Calexico RR

L1. Historic and/or Common Name: Southern Pacific Railroad (Imperial and Gulf Branch)

L2a. Portion Described: ☒ Entire Resource ☐ Segment ☐ Point Observation ☐

Designation:

b. Location of point or segment: (Provide UTM coordinates, legal description, and any other useful locational data. Show the area that has been field inspected on a Location Map)

L3. Description: (Describe construction details, materials and artifacts found at this segment/point. Provide plans/sections as appropriate.)

A standard gauge track on a gravel base. The Southern Pacific Company was petitioned by the people of Imperial Valley to construct a branch line running through the Valley from the main line. When the Southern Pacific failed to get construction of the branch underway promptly, local citizens purchased right of way and materials with the intention of doing the job themselves. This brought immediate action from the Southern Pacific. By February 1903, the branch line had been completed from Old Beach (now Niland) southerly to Imperial. By January 1904 it had been extended on to Calexico. (see continuation)

L4. Dimensions: (In feet for historic features and meters for prehistoric features.)

a. Top Width

b. Bottom Width

c. Height or Depth

d. Length of Segment 65 km

L4e. Sketch of Cross-Section (include scale)

Facing:

L5. Associated Resources:

P-13-007699 CA-IMP-7594H Railroad
buildings in Calexico

L6. Setting: (Describe natural features, landscape characteristics, slope, etc., as appropriate.)

The tracks rise approximately 125 feet in elevation from Niland to Calexico over a 65-km distance. Most of the line crosses agricultural fields. When originally constructed some lands were still natural desert lake bottom.

L7. Integrity Considerations:

Aside from routine maintenance the line is in the same location as when constructed in 1903-04.

L8a. Photograph, Map or Drawing

SEE PHOTO PAGE

L8b. Description of Photo, Map,
or Drawing (View, scale, etc.)

See photo page

L9. Remarks:

L10. Form Prepared by: (Name,
affiliation, and address)

Karen M. Collins
IVC Desert Museum

L11. Date: June 11, 2003

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary# P-13-008682

HRI#

Trinomial# CA-IMP-8166

Page 19 of 27

*Resource Name or # (Assigned by recorder) Niland to Calexico RR

P2b. Niland 1956

Westmorland 1956

Brawley 1957

El Centro 1957

Heber 1957 photo revised 1976

Calexico 1957

The track passes through these sections

T 11S, R 14E Sec 34, 27, 22, 15, 10, 3

T 12S, R 14E Sec 34, 27, 22, 15, 10, 3

T 13S, R 14E Sec 33, 28, 21, 22, 15, 10, 3

T 14S, R 14E Sec 31, 30, 29, 20, 17, 8, 5, 4

T 15S, R 14E Sec 32, 31, 30, 19, 18, 7, 6

T 16S, R 14E Sec 33, 28, 21, 16, 17, 8, 5

T 17S, R 14E Sec 14, 11, 3, 2

P2d. North UTM 639120 East 3678620 North NAD 27

South UTM 641075 East 3614965 North NAD 27

A11. line running through the Valley from the main line. When the Southern Pacific failed to get construction of the branch underway promptly, local citizens purchased right of way and materials with the intention of doing the job themselves. This brought immediate action from the Southern Pacific. By February 1903, the branch line had been completed from Old Beach (now Niland) southerly to Imperial. By January 1904 it had been extended on to Calexico. The line is still in use transporting goods from Mexico and Imperial county to the rest of the US.

The Southern Pacific planned to extend the line from Calexico in a loop through Lower California, Mexico and back into the United States near Hanlon Heading, connecting with the main line a few miles west of Yuma, Arizona. The proposed line had been completed from Calexico-Mexicali to Cocupah, some fifteen miles when the 1905 break occurred. This portion of the Southern Pacific line in Lower California was completed in 1909 and is known as the Inter-California Railroad.

L3. City of Calexico - major siding, station, UC customs, crosses US/Mexico border, crosses All American Canal approximately 1/2 mile northwest of city

Town of Heber - major siding

City of El Centro - major siding, connection with AZ & San Diego RR, connection with line from Holtville, train station with three associated buildings and platform (P-13-008322)

City of Imperial - major siding and platforms

City of Brawley - major sidings, crosses Alamo River at T13s, R 14E sec 3

Town of Calipatria - sidings and platforms

Town of Niland - sidings and platforms, meets main line of Southern Pacific to New Orleans, Los Angeles and Sacramento

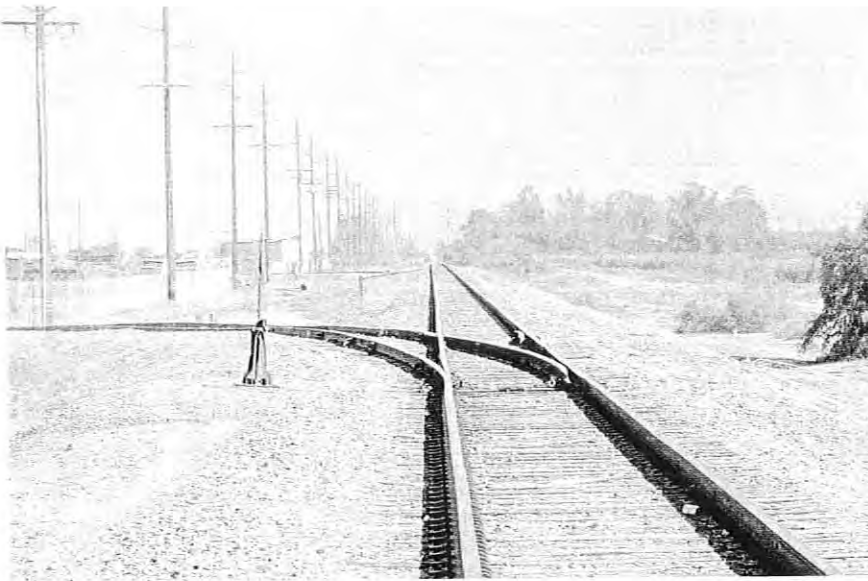
This line is now used only for commercial traffic. Passenger service is no longer offered.

*Recorded by Karen M. Collins

*Date June 13, 2003

☒ Continuation ☐ Update

Southern Pacific rail line facing
north
Standing east side of track at
Horn Road
El Centro June 13,2003
Olympus digital camera



Southern Pacific rail line facing
south
Standing east side of track at
Horn Road
El Centro June 13,2003
Olympus digital camera

Southern Pacific rail line facing
north
Standing east side of track at
Main Street
El Centro June 13,2003
Olympus digital camera



P-13-008682
CA-IMP-8166

CALIFORNIA
IMPERIAL COUNTY
CALIPATRIA QUADRANGLE

DEPARTMENT
ENGINEERS, U. S. ARMY

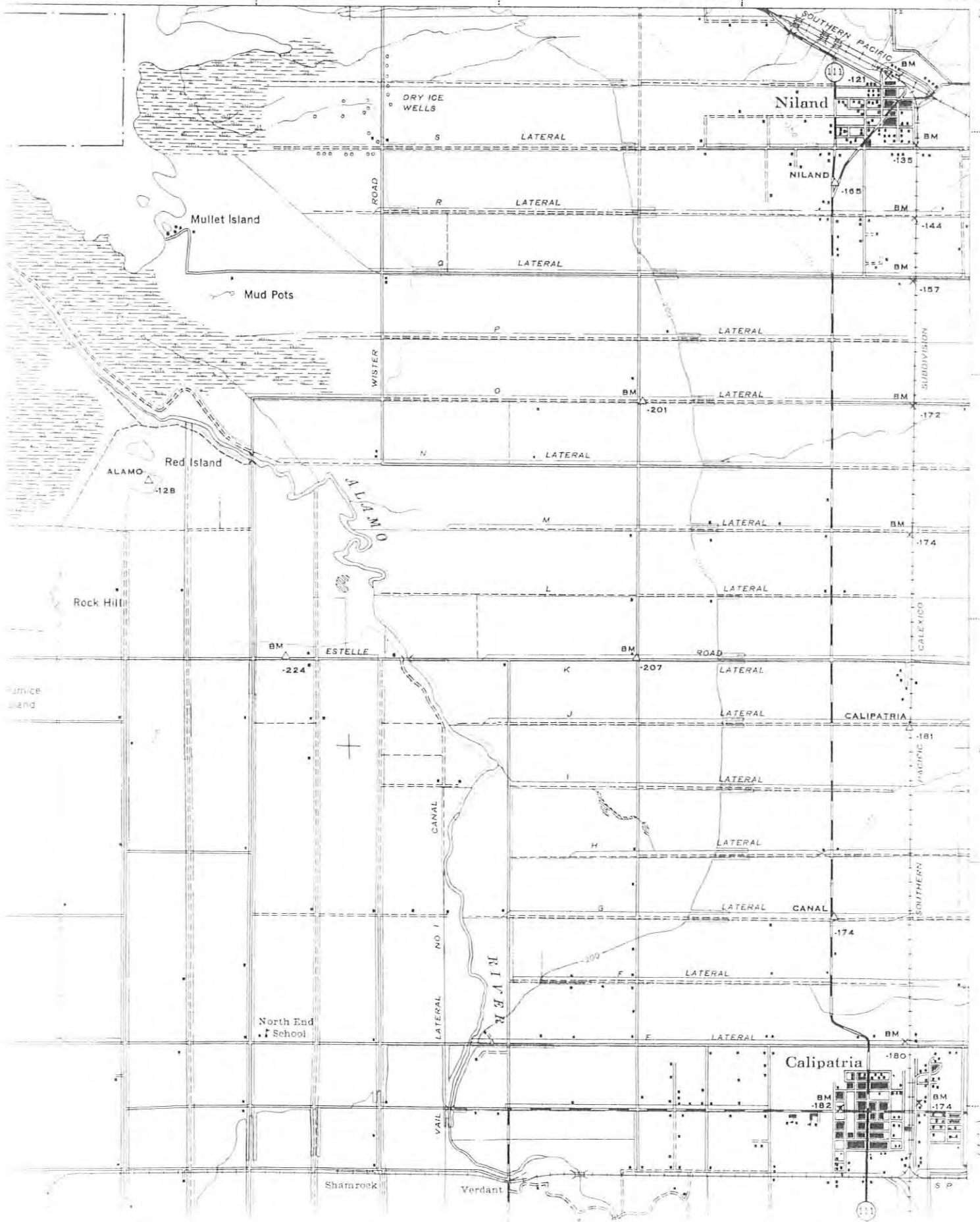
(Frink)

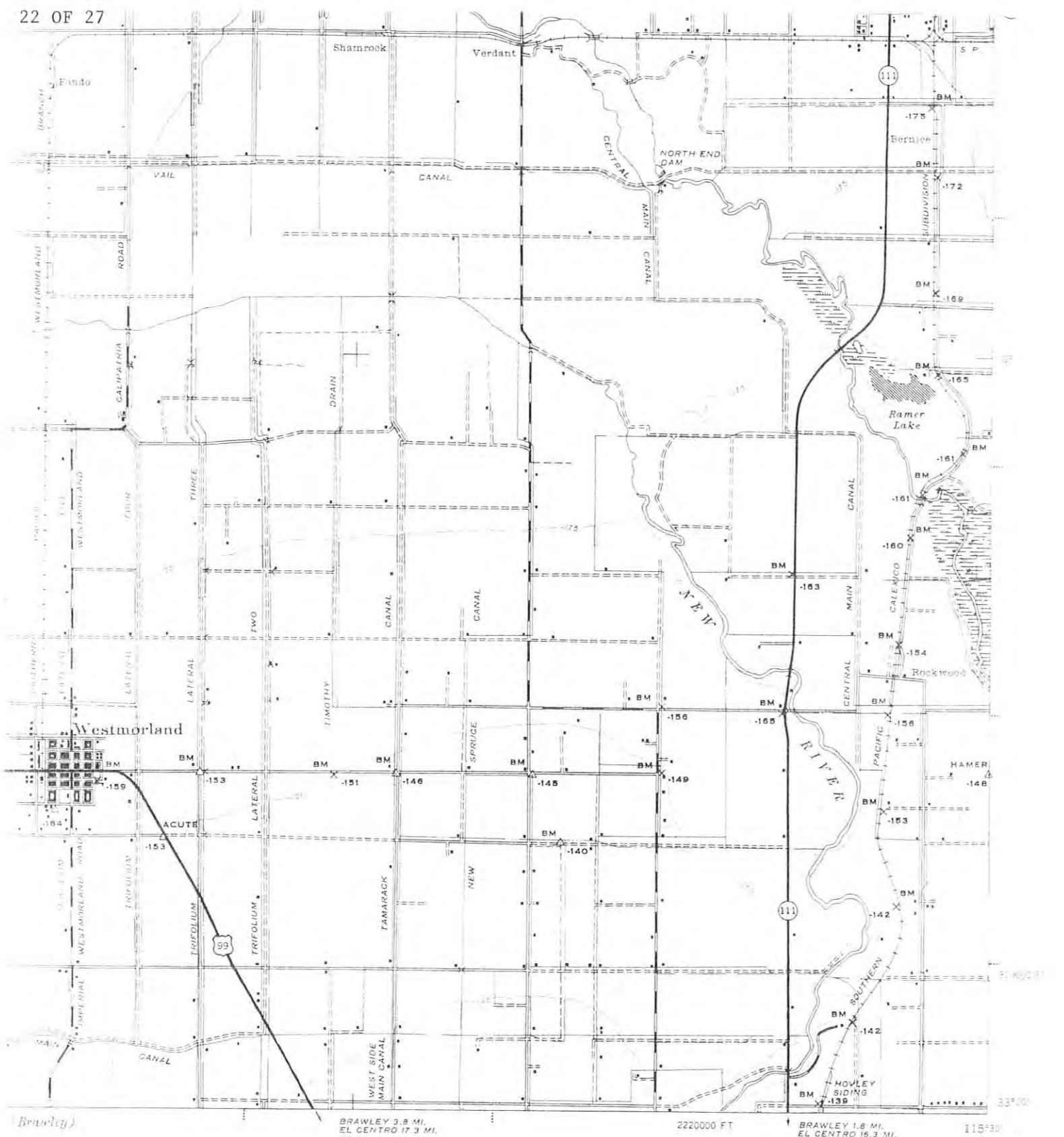
INDIO 55 MI.
MECCA 41.2 MI.

15 MINUTE SERIES

115°20'

(Irish Pass)





Scale 1/62500

0 2 4 6 Miles

0 2000 4000 6000 Yards

Interval 25 feet

(Contour Interval 1929 Adj.)

INTERIOR GEOLOGICAL SURVEY WASHINGTON D C 1922

P-13-008682
CA-IMP-8166

TRUE NORTH
MAGNETIC NORTH

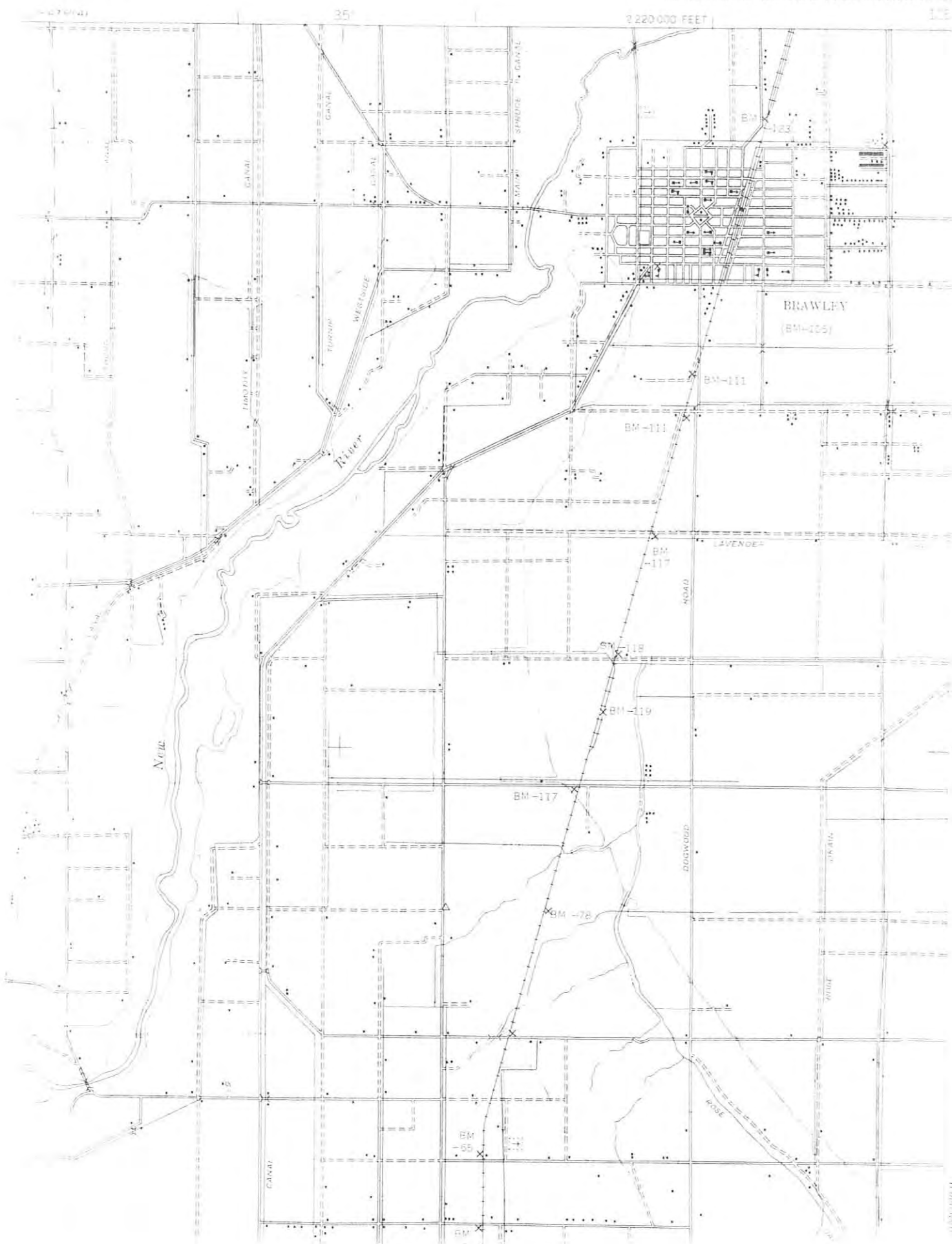
NE 1/4 INDICATED BY DOTTED TICKS
NE 1/4 1/2 INDICATED BY DOTTED TICKS

APPROXIMATE MEAN
DECLINATION 1945

CALIPATRIA, CALIF.
N3300-W11530/15

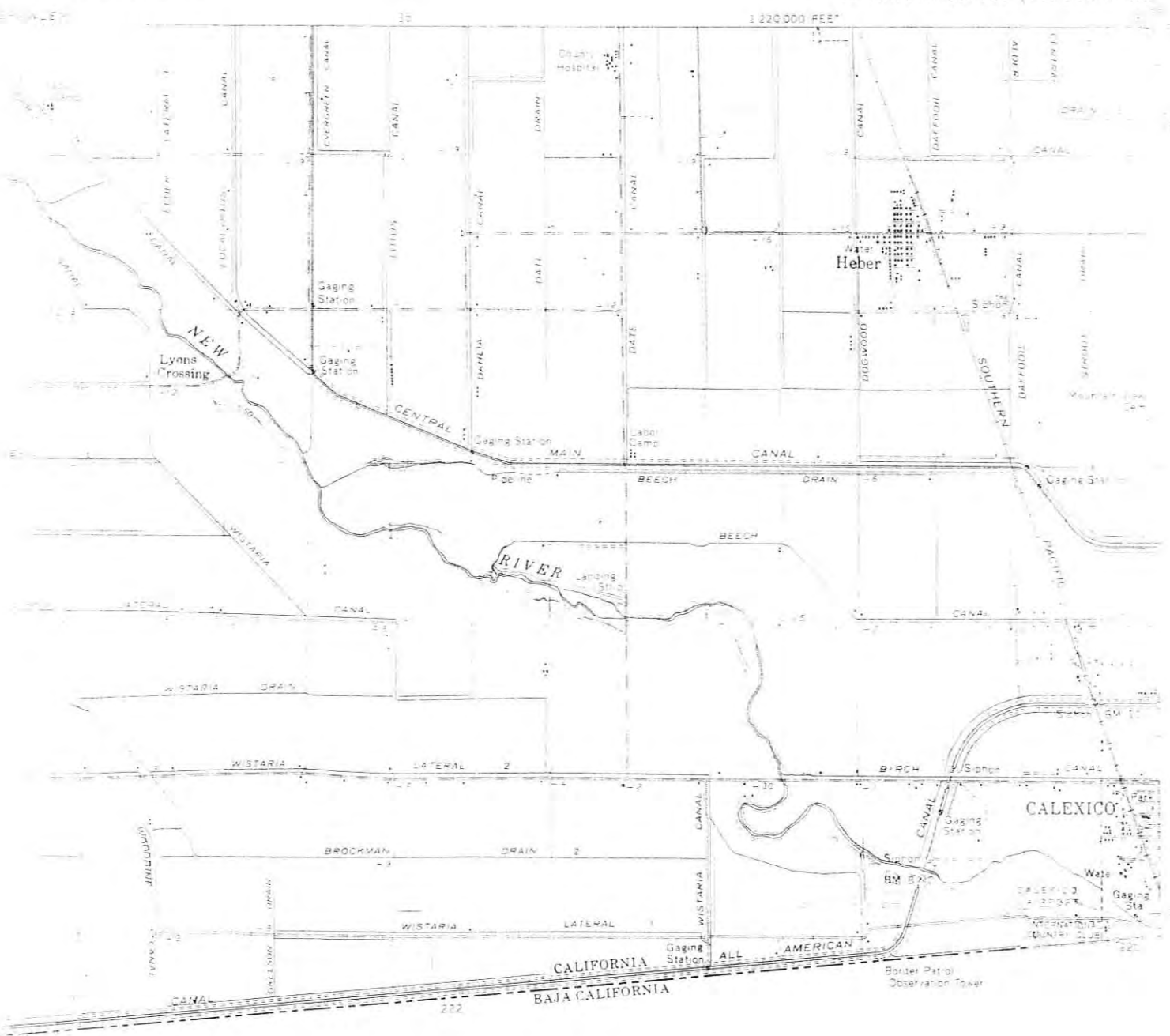
199

BRAWLEY QUADRANGLE
CALIFORNIA—IMPERIAL CO.
15 MINUTE SERIES (TOPOGRAPHIC)



OF CALIFORNIA
WATER RESOURCES

HEBER QUADRANGLE
CALIFORNIA-IMPERIAL CO
15 MINUTE SERIES (TOPOGRAPHIC)



ROAD CLASSIFICATION

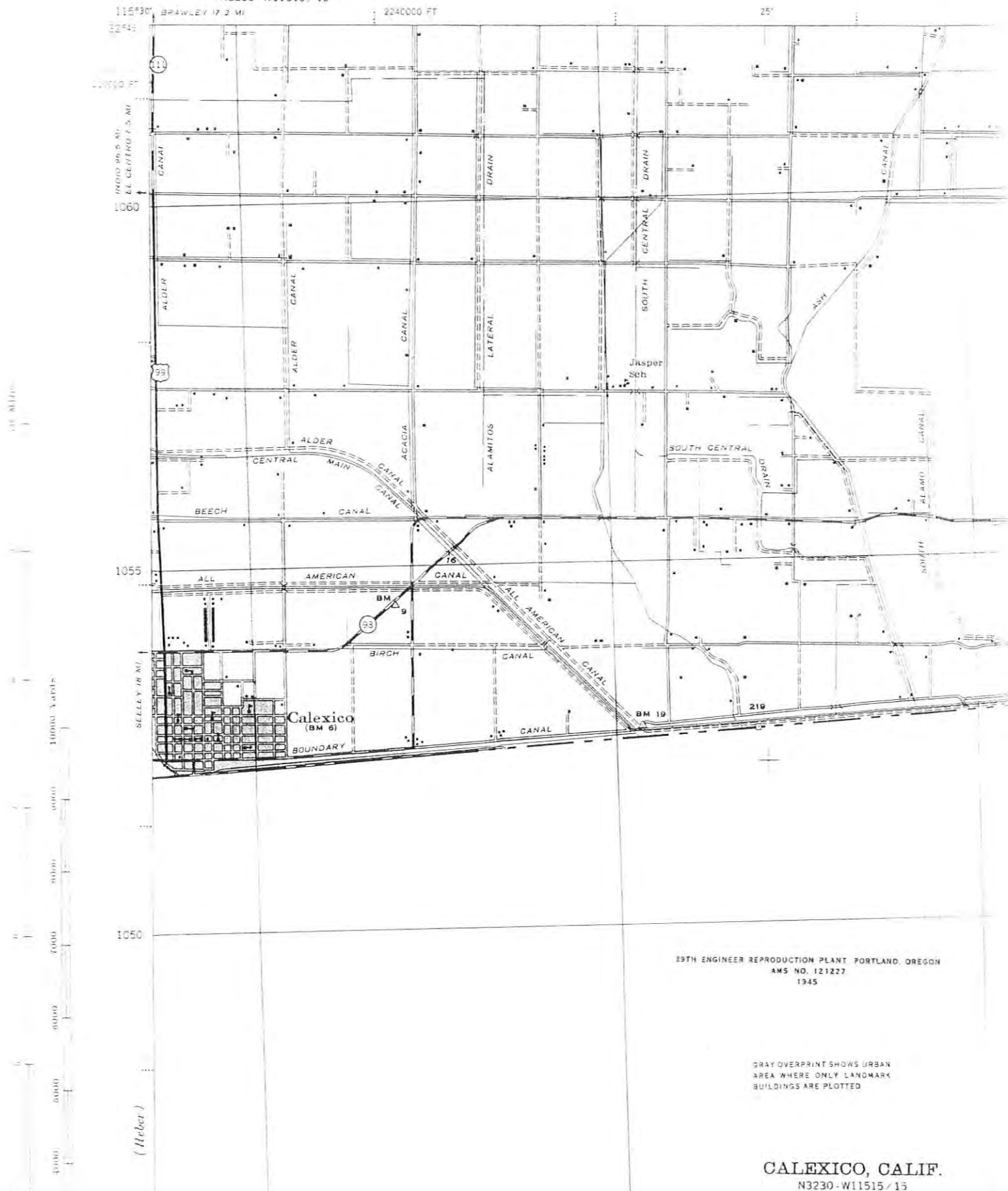
Heavy duty	Light duty
Medium duty	Unimproved dirt
U.S. Route	State Route

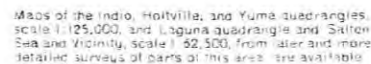
This area also covered by 1:24,000 scale maps of
Heber and Mount Signal 7.5 minute quadrangles
surveyed 1957

HEBER, CALIF.
N3230 - W11530/15

1957

CORPS OF





CONTINUATION SHEET

Property Name: Main Central Canal

Page 1 of 1

In February 2023, PaleoWest (Clark 2023) documented an approximately 3-mile-long segment of the Central Main Canal. The Central Main is one of the major distribution canals that channels water through the Imperial Valley. The linear feature branches off of the All-American Canal northeast of Calexico. It runs in a roughly northwest direction for approximately 27 miles to drain into the New River. The recorded segment of the Central Main Canal ranged in width from approximately 80 to 100 feet and is contained within sloped earthen banks that are flanked by dirt and paved access roads. Although the exact date of construction is not known, historical maps indicate that it was operational by the early 1900s. PaleoWest recommended the Central Main Canal eligible for listing on the California Register of Historical Resources under Criterion 1.

In October 2023, Chronicle Heritage conducted a survey for the proposed Heber 1 Solar Project (Clark and Torres 2023). The survey revisited portions of the canal that intersect Dogwood Road and Pfizer Road (Ware Road) in the southern extent of Section 33, Township 16 South, Range 14 East. These portions of the canal range in width from approximately 80 to 100 feet and are characterized by sloped earthen banks that are flanked by dirt roads. Bridges span the canal at both Dogwood Road and Pfizer Road (see photographs below). No noted changes in the canal were observed since its last recordation.



Central Main Canal at Dogwood Road, facing east



Central Main Canal at Pfizer Road, facing west

Reference: Clark, Tiffany, and Gena Severen (2023) Cultural Resources Assessment for the Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Facilities, Imperial County, California. Report prepared by Catalyst Environmental Solutions by PaleoWest, Monrovia, CA.

Clark, Tiffany, and Scott Torres (2023) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

PRIMARY RECORD

Primary #
HRI #

Trinomial
NRHP Status Code

Other Listings
Review Code

Reviewer

Date

Page 1 of 5

*Resource Name or #: Central Main Canal

P1. Other Identifier:

*P2. Location: ☐ Not for Publication ☒ Unrestricted

a. County: Imperial

b. USGS 7.5' Quad: Heber, CA

Date: 1960 T 16S; R 14E of Sec 2-4 ; S.B.B.M.

T 15S; R 14E of Sec 32-33 ; S.B.B.M.

c. Address: none

City:

Zip:

d. UTM: Zone: 11 west end ; 636020 mE/ 3619930 mN; east end: 640635 mE/ 3619160 mN

e. Other Locational Data: Central Main Canal runs in an east-west direction between Highway 111 on the east. Western boundary lies between Dogwood Road and South Clark Road.

*P3a. **Description:** This resource consists of an approximately 3-mile-long segment of the Central Main Canal. The Central Main is one of the major distribution canals that channels water through the Imperial Valley. The linear feature branches off of the All-American Canal northeast of Calexico. It runs in a roughly northwest direction for approximately 27 miles to drain into the New River. The recorded segment of the Central Main Canal ranges in width from approximately 80 to 100 feet and is contained within sloped earthen banks that are flanked by dirt and paved access roads (see photograph below). Fairly dense, low vegetation lines the areas of the banks nearest the water. Although the exact date of construction is not known, historical maps indicate that it was operational by the early 1900s.

*P3b. **Resource Attributes:** HP20. Canal

*P4. **Resources Present:** ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: View of Central Main Canal, facing east 2/23/2023

*P6. **Date Constructed/Age and Sources:** ☒ Historic ☐ Prehistoric ☐ Both
Constructed by 1907, according to historical topographic maps

*P7. **Owner and Address:**
Imperial Irrigation District
333 E Barioni Blvd
Imperial, CA 92251

*P8. **Recorded by:**
Tiffany Clark
PaleoWest
17 Ivy Avenue
Monrovia, CA 91016

*P9. **Date Recorded:** 2/23/2023

*P10. **Survey Type:** Pedestrian Survey

*P11. **Report Citation:** Tiffany

Clark (2023) Cultural Resources Assessment for the Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Facilities, Imperial County, California. Report prepared by Catalyst Environmental Solutions by PaleoWest, Monrovia, CA.

*Attachments: ☐ NONE ☒ Location Map ☒ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 2 of 5

*NRHP Status Code

*Resource Name or # Central Main Canal

B1. Historic Name: Central Main Canal

B2. Common Name: Central Main Canal

B3. Original Use: Irrigation canal B4. Present Use: Irrigation canal

*B5. Architectural Style: N/A

*B6. Construction History: (Construction date, alterations, and date of alterations)

One of three main canals associated with the All-American Canal. Constructed by 1907.

*B7. Moved? ☒No ☐Yes ☐Unknown Date: N/A

Original Location: N/A

*B8. Related Features: The recorded segment of the Central Main Canal ranges in width from approximately 80 to 100 feet and is contained within sloped earthen banks that are flanked by dirt and paved access roads. Fairly dense, low vegetation lines the areas of the banks nearest the water. No associated features appear to be associated with this section of the canal.

B9a. Architect: Unknown

b. Builder: Imperial Irrigation District

*B10. Significance: Theme: Irrigation Distribution Systems

Area: Heber

Period of Significance: N/A

Property Type: Channel

Applicable Criteria: N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Imperial Irrigation District (IID) was formed in 1911 under a state charter to acquire properties of the bankrupt California Development Company. By 1922, the IID had acquired 13 water companies and between 1930 and 1940, the All-American Canal was built to replace the Alamo Canal (Dowd 1956:88). The All-American Canal provided reliable water to the valley from the Colorado River and by 1942, became the sole source of imported water for the Imperial Valley.

Three major distribution canals channel water throughout the valley: East Highline, Central Main, and Westside Main canals (CH2M Hill 2001). The three canals service different portions of the valley: the East Highline Canal serves IID's area east of the Alamo River, the Central Main Canal serves the area between the Alamo River and the New River; and the Westside Main Canal serves the area west of the New River. The Central Main Canal branches from the All-American Canal near the town of Calexico and runs northward through the central portion of the IID. Following its construction, a network of irrigation laterals was constructed off the Central Main Canal, most of which run northward. The Central Main Canal system has one associated reservoir, the Fudge Reservoir, that is located near Brawley. Although the exact date of construction of the canal is not known, historic topographic maps indicate it was operational by 1907 (USGS 1907).

See CONTINUATION FORM

B11. Additional Resource Attributes: (List attributes and codes) N/A

*B12. References:

See CONTINUATION FORM.

B13. Remarks: N/A

*B14. Evaluator:

Tiffany Clark
PaleoWest
17 Ivy Avenue
Monrovia, CA 91016

*Date of Evaluation: 2/24/23

(Sketch Map with north arrow required.)
See attached Sketch Map.

*Recorded by: Tiffany Clark

*Date: 2/23/2023

☒ Continuation

☐ Update

*B10. Significance (continued)

CRHR Evaluation. The Central Main Canal is a major distribution canal and an integral part of the extensive irrigation system that comprises the IID. The construction and operation of the Central Main Canal and its associated laterals can be considered an important event in the early settlement of the Imperial Valley. The canal system that was built in the early twentieth century significantly increased the agricultural productivity of the area between the Alamo River and New River. Because the Central Main Canal can be directly associated with historical events that have made a significant contribution to the broad patterns of our history, it is recommended eligible under Criterion 1. The Central Main Canal was funded and constructed by the IID and cannot be attributed to a specific individual. Because it cannot be associated with the lives of persons important in our past, it does not meet CRHR Criterion 2. The Central Main Canal and its associated laterals and drains are simple in design and construction and utilitarian in nature, and their construction does not represent any innovative design or building technique. Therefore, the resource does not exhibit any distinctive characteristics or engineering merits that would suggest it is significant under Criterion 3. Finally, the Central Main Canal does not have the potential to yield any information important to the study of twentieth century channel construction and is thus not eligible under Criterion 4.

The alignment of the Central Main Canal has not changed significantly since its construction in the early part of the twentieth century and as such, the resource retains integrity of location. There have been some minor alterations to the canal over the years, such as the replacement of bridges and the installation of brine pipelines. However, the earthen construction that characterizes the canal has not been substantially modified. Therefore, it retains integrity of design, workmanship, and materials. Although agricultural fields are still prevalent in the vicinity of the Central Main Canal, the construction and operation of industrial and energy facilities in the immediate vicinity has resulted in the loss of the resource's integrity of setting, feeling, and association. Despite the loss of these aspects of integrity, this segment of the Central Main Canal retains the ability to convey its significance.

Based on these findings, PaleoWest recommends the Central Main Canal eligible for inclusion in the CRHR under Criterion 1.

*B12. References:

CH2M Hill

2001 Habitat Conservation Plan IID Water Conservation and Transfer Project. Chapter 2. Electronic document accessed September 9, 2022. Online at: <https://www.iid.com/home/showpublisheddocument/1492/635648001335730000>

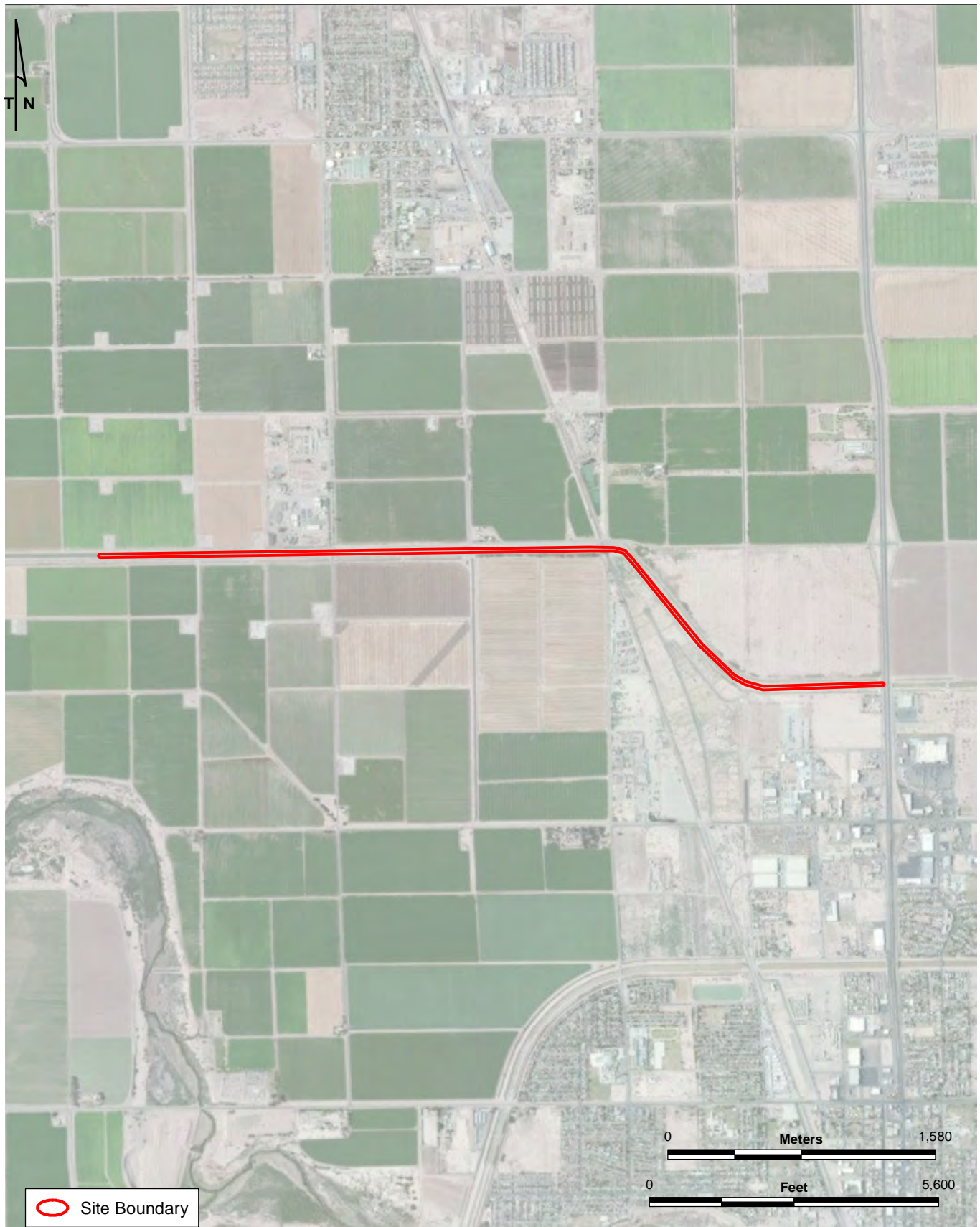
Dowd, M.J.

1956 *IID – The First 40 Years*. Imperial Irrigation District, El Centro, California.

U.S. Geological Survey (USGS)

1907 *Holtville, California* (1:125,000) topographic quadrangle. Washington, D.C.





CONTINUATION SHEET

Property Name: _____ Dogwood Canal _____

Page 1 of 3

In February 2023, PaleoWest documented the Dogwood Canal, an open channel that branches off the Central Main Canal near Highway 111 (Clark 2023). The canal runs west paralleling the Central Main Canal for approximately 2.5 miles before turning north and continuing along Dogwood Road for a distance of 10.3 miles. Although the date of construction of the canal is not known, historical maps indicate that it was operational by 1915. PaleoWest recommended that the resource as not eligible for listing on the California Register of Historical Resources.

In October 2023, Chronicle Heritage conducted a survey for the proposed Heber 1 Solar Project (Clark and Torres 2023). A previously undocumented lateral (Dogwood Lateral 2) associated with the Dogwood Canal was identified in the Project area in Section 33, Township 16 South, Range 14 East (see updated location map). The 0.5-mile-long lateral segment extends west of Dogwood Road just north of the Heber Geothermal Energy Complex. The lateral consists of an open, concrete-lined structure that has a top width of approximately 8 to 10 feet with an unknown depth. Historic topographic maps indicate the lateral was in use by 1943 (USGS 1943)



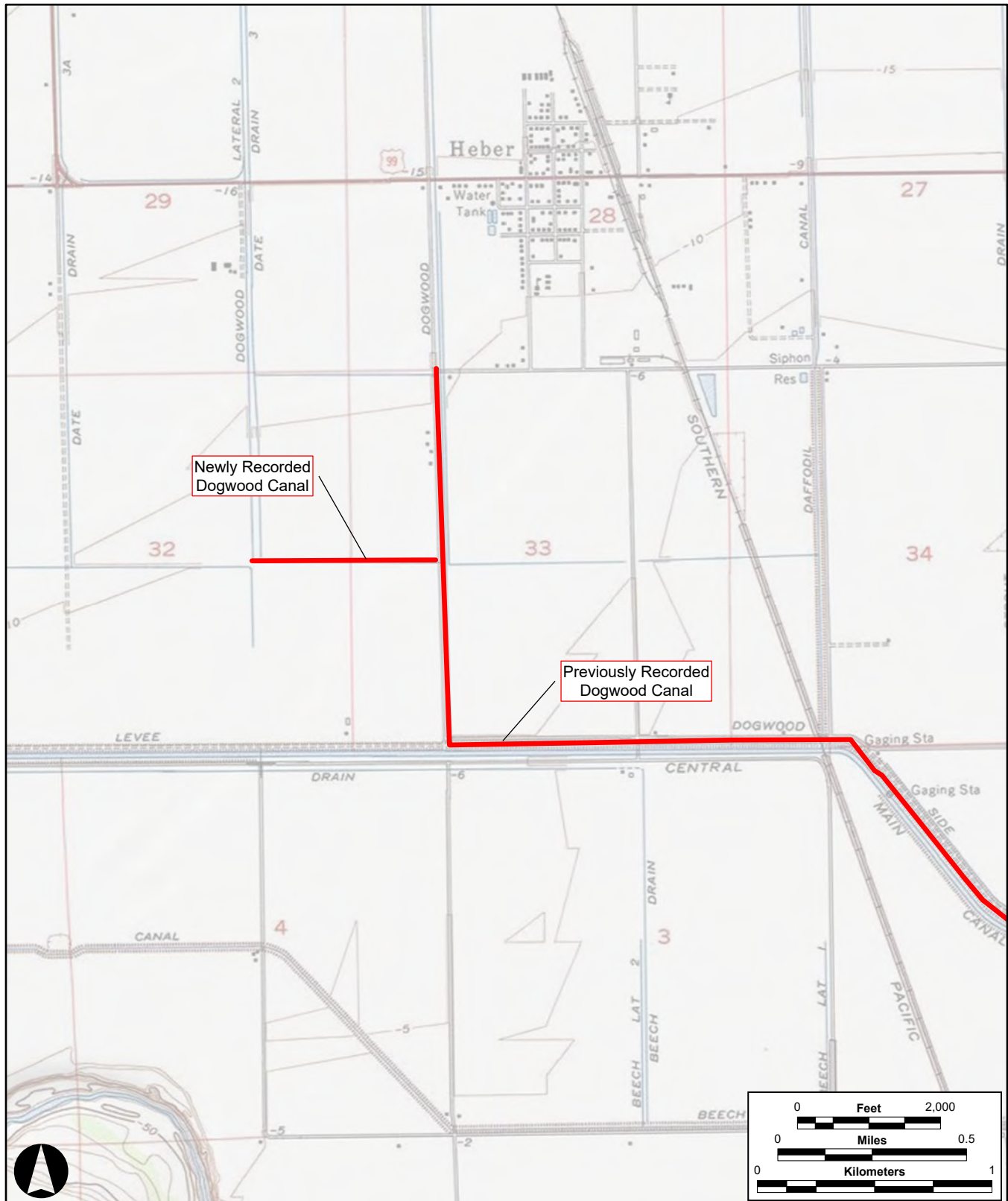
View of Dogwood Lateral 2 Canal, facing west

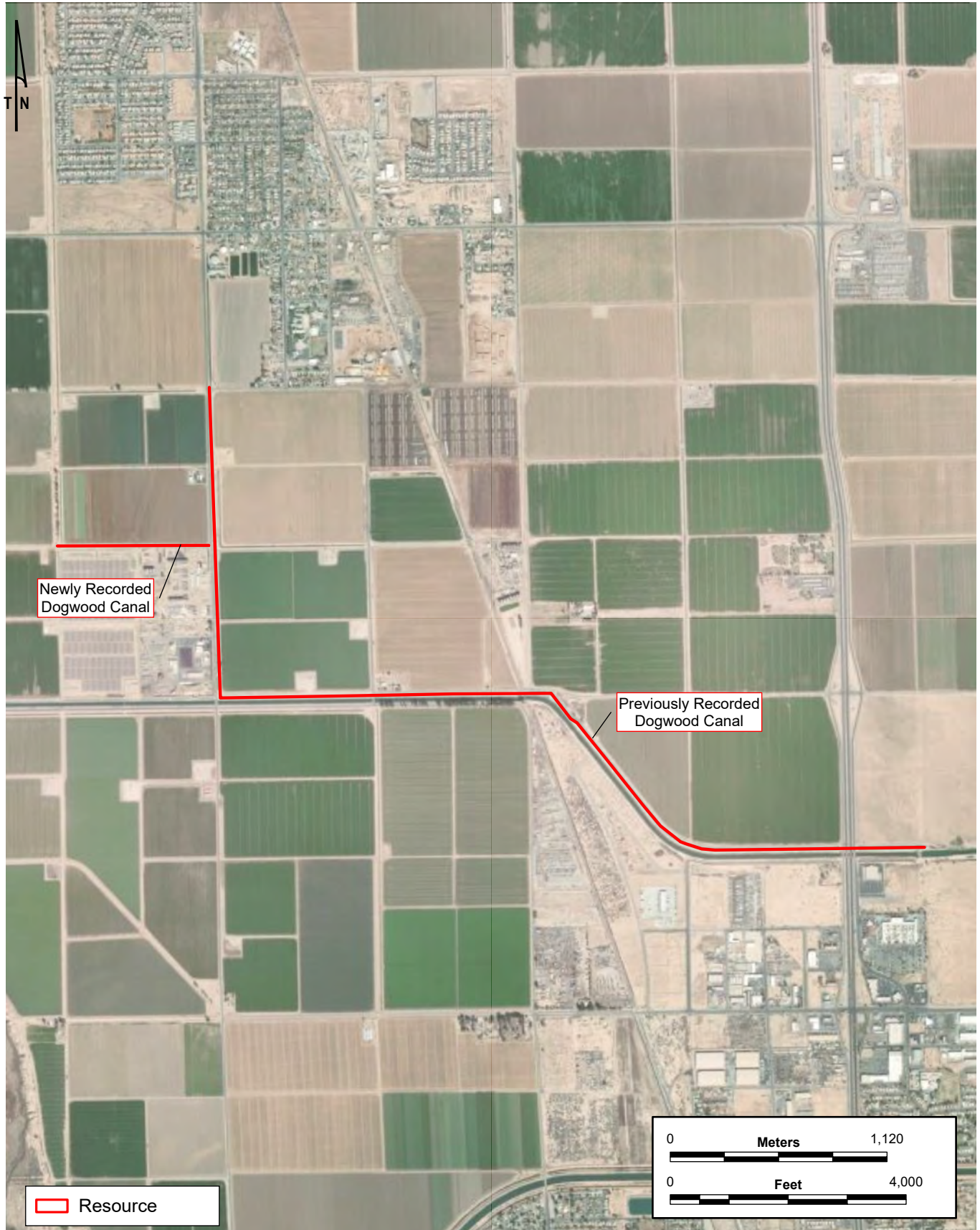
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References: Clark, Tiffany, and Gena Severen (2023) Cultural Resources Assessment for the Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Facilities, Imperial County, California. Report prepared by Catalyst Environmental Solutions by PaleoWest, Monrovia, CA.

Clark, Tiffany, and Scott Torres (2023) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

USGS (1943) *Heber, CA* Topographic Quadrangle Map. Scale 1:62,5000. Washington, D.C.





PRIMARY RECORD

Primary #
HRI #

Trinomial
NRHP Status Code

Other Listings
Review Code

Reviewer

Date

Page 1 of 6

*Resource Name or #: Dogwood Canal

P1. Other Identifier:

*P2. Location: ☐ Not for Publication ☒ Unrestricted

a. County: Imperial

b. USGS 7.5' Quad: Heber, CA

Date: 1960 T 16S; R 14E of Sec 1-2 ; S.B.B.M.

T 15S; R 14E of Sec 32-34 ; S.B.B.M.

c. Address: none

City:

Zip:

d. UTM: Zone: 11 west end ; 636595 mE/ 3619960 mN; east end: 641045 mE/ 3619210 mN

e. Other Locational Data: Dogwood Canal parallels the Central Main Canal. Documented portion of resource run from a point near the Highway 111 in a westward direction along the north side of the Central Main Canal for a distance of 3.5 miles.

*P3a. Description: The Dogwood Canal branches off the Central Main Canal near Highway 111. It runs west paralleling the Central Main Canal for approximately 2.5 miles before turning north and continuing along Dogwood Road for a distance of 10.3 miles. An approximately 0.7-mile-long portion of the canal within the city of El Centro runs through an underground pipeline. Although the date of construction of the canal is not known, historical maps indicate that it was operational by 1915.

The recorded canal segment consists of an open channel that has a top width ranging from approximately 20 to 60 feet (see photograph). Although much of the structure is characterized by earthen banks, concrete lining has been placed within a section of the canal just west of Dogwood Road and along a 0.5-mile-long area east of Pitzer Road. Based on contractor's date stamps, the concrete lining appears to have been installed well after the construction of the canal.

*P3b. Resource Attributes: HP20. Canal

*P4. Resources Present: ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: View of Dogwood Canal, facing south, 2/23/2023

*P6. Date Constructed/Age and Sources:
☒ Historic ☐ Prehistoric ☐ Both
Constructed by 1915, according to historical topographic maps

*P7. Owner and Address:
Imperial Irrigation District
333 E Barioni Blvd
Imperial, CA 92251

*P8. Recorded by:
Tiffany Clark
PaleoWest
17 Ivy Avenue
Monrovia, CA 91016

*P9. Date Recorded: 2/23/2023

*P10. Survey Type: Pedestrian Survey

*P11. Report Citation: Tiffany Clark (2023)
Cultural Resources Assessment for the
Dogwood Geothermal Energy Project,
Dogwood Solar, and Heber 2 Solar Facilities,

Imperial County, California. Report prepared by Catalyst Environmental Solutions by PaleoWest, Monrovia, CA.

*Attachments: ☐ NONE ☒ Location Map ☒ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 2 of 6

*NRHP Status Code

*Resource Name or # Dogwood Canal

- B1. Historic Name: Dogwood Canal
B2. Common Name: Dogwood Canal
B3. Original Use: Dogwood Canal B4. Present Use: Irrigation canal

*B5. Architectural Style: N/A

*B6. Construction History: (Construction date, alterations, and date of alterations)
Dogwood Canal was constructed by 1915.

*B7. Moved? ☒No ☐Yes ☐Unknown Date: N/A Original Location: N/A

*B8. Related Features: The recorded canal segment consists of an open channel that has a top width ranging from approximately 20 to 60 feet. Although much of the structure is characterized by earthen banks, concrete lining has been placed within a section of the canal just west of Dogwood Road and along a 0.5-mile-long area east of Pitzer Road. Based on contractor's date stamps, the concrete lining appears to have been installed well after the construction of the canal (see continuation sheet). At the time of the survey, the Dogwood Canal contained water from approximately four feet below ground level to an unknown depth; the bottom of the waterway was not visible. The exact date of construction is not known. However, historical maps indicate that the canal was operational by 1915 (USGS 1915). See CONTINUATION FORM.

B9a. Architect: Unknown

b. Builder: Imperial Irrigation District

*B10. Significance: Theme: Irrigation Distribution Systems

Area: Heber

Period of Significance: N/A

Property Type: Channel

Applicable Criteria: N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Imperial Irrigation District (IID) was formed in 1911 under a state charter to acquire properties of the bankrupt California Development Company. By 1922, the IID had acquired 13 water companies and between 1930 and 1940, the All-American Canal was built to replace the Alamo Canal (Dowd 1956:88). The All-American Canal provided reliable water to the valley from the Colorado River and by 1942, became the sole source of imported water for the Imperial Valley.

Three major distribution canals channel water throughout the valley: East Highline, Central Main, and Westside Main canals (CH2M Hill 2001). The three canals service different portions of the valley: the East Highline Canal serves IID's area east of the Alamo River, the Central Main Canal serves the area between the Alamo River and the New River; and the Westside Main Canal serves the

See CONTINUATION FORM

B11. Additional Resource Attributes: (List attributes and codes) N/A

*B12. References:

See CONTINUATION FORM.

B13. Remarks: N/A

*B14. Evaluator:

Tiffany Clark
PaleoWest
17 Ivy Avenue
Monrovia, CA 91016

*Date of Evaluation: 2/24/23

(Sketch Map with north arrow required.)

See attached Sketch Map.

*Recorded by: Tiffany Clark

*Date: 2/23/2023

☒ Continuation

☐ Update

* B8. Related Features (continued)

The Dogwood Canal has numerous check/drop structures along its course, each of which consist of gates with chute and cement walls that operate with a jack-type lifting mechanism resting on a wooden cross beam (see continuation sheet). The checks/drop structures have curved cement headwalls on their upstream side and straight cement headwalls on their downstream side. The condition of the gates and hardware associated with these features suggest they have been replaced at some point and are not original to the structure.

Along much of its alignment, the Dogwood Canal is flanked by dirt and paved roads. Several roads intersect the Dogwood Canal including Highway 111, Dogwood Road, and Pitzer Road. In these areas, the canal run through an underground pipeline under the roadway. A Southern Pacific Railway bridge has also been constructed over the canal near Pitzer Road. Finally, a series of brine pipelines have been installed under the Dogwood Lateral I approximately 1,500 feet west of the Dogwood Road Bridge.

*B10. Significance (continued)

area west of the New River. The Dogwood Canal diverges off the Central Main Canal near Highway 111 and runs west paralleling the Central Main Canal for approximately 2.5 miles before turning north and continuing along Dogwood Road for a distance of 10.3 miles. An approximately 0.7-mile-long portion of the canal within the city of El Centro runs through an underground pipeline. Although the date of construction of the canal is not known, historical maps indicate that it was operational as early as the 1910s (USGS 1915).

CRHR Evaluation. The Dogwood Canal is a part of the IID's Central Main canal system, which was initially constructed in the early twentieth century. The construction and operation of the Dogwood Canal and its associated laterals can be considered an important event in the early settlement of the Imperial Valley. The canal systems that were built at this time significantly increased the agricultural productivity of the area between the New River and Alamo River. Because the Dogwood Canal can be directly associated with historical events that have made a significant contribution to the broad patterns of our history, it is recommended eligible under Criterion 1. The Dogwood Canal was funded and constructed by the IID and cannot be attributed to a specific individual. Because it cannot be associated with the lives of persons important in our past, it does not meet CRHR Criterion 2. The Dogwood Canal and its associated laterals are simple in design and construction and utilitarian in nature, and their construction does not represent any innovative design or building technique. Therefore, the resource does not exhibit any distinctive characteristics or engineering merits that would suggest it is significant under Criterion 3. Finally, the Dogwood Canal does not have the potential to yield any information important to the study of twentieth century channel construction and is therefore not eligible under Criterion 4.

The alignment of the Dogwood Canal has not changed since its construction in the early part of the twentieth century and as such, the resource retains integrity of location. Although agricultural fields are still prevalent in the vicinity of the Dogwood Canal, the construction and operation of industrial and energy facilities in the immediate vicinity has resulted in the loss of the resource's integrity of setting, feeling, and association. The resource has experienced extensive alterations including lining portions of the canal with concrete and the replacement of gates and hardware. As a result of these alterations, the structure lacks integrity of design, workmanship, and materials. Due to the loss of integrity, the Dogwood Canal has lost its ability to convey its significance under Criterion 1.

Based on these findings, PaleoWest recommends the Dogwood Canal not eligible for inclusion in the CRHR.

*B12. References:

CH2M Hill

2001 Habitat Conservation Plan IID Water Conservation and Transfer Project. Chapter 2. Electronic document accessed September 9, 2022. Online at: <https://www.iid.com/home/showpublisheddocument/1492/635648001335730000>

Dowd, M.J.

1956 IID – *The First 40 Years*. Imperial Irrigation District, El Centro, California.

U.S. Geological Survey (USGS)

1915 *El Centro, California* (1:125,000) topographic quadrangle. Washington, D.C.

*Recorded by: Tiffany Clark

*Date: 2/23/2023

☒ Continuation

☐ Update



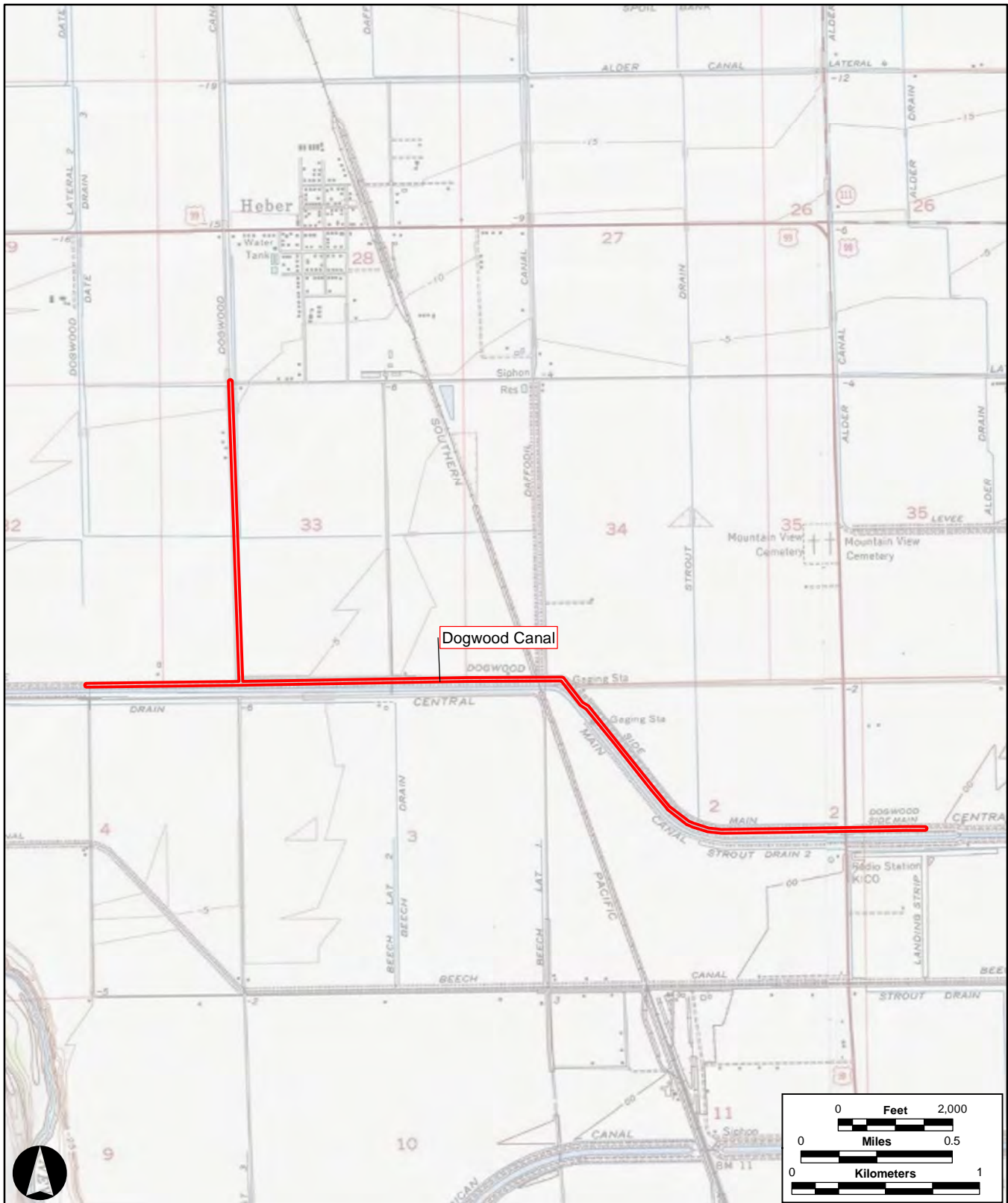
Portion of Dogwood Canal by Dogwood Road showing recently installed concrete lining, facing south



Portion of Dogwood Canal gate feature and concrete lining with date stamp, east of Dogwood Road, facing south



Portion of Dogwood Canal east of Pitzer Road showing concrete lining and check/drop feature with 1957 date stamp, facing east





CONTINUATION SHEET

Property Name: _____ Beech Canal _____

Page 1 of 1

In February 2023, PaleoWest documented the Beech Canal, a 6.5-mile-long structure that originates off the Central Main Canal in Calexico and drains into the New River (Clark 2023). The resource also contained several smaller laterals and associated drains that diverged off the north and south sides of the canal along its length. PaleoWest recommended that the resource is not eligible for listing on the California Register of Historical Resources.

In October 2023, Chronicle Heritage conducted a survey for the proposed Heber 1 Solar Project (Clark and Torres 2023). As part of the field work effort, a portion of the canal and one of the laterals north of Cole Boulevard and east of Dogwood Road was revisited in the western portion of Section 3, Township 17 South, Range 14 East. The canal consists of an open, concrete-lined, trapezoidal-shaped structure that has a top width of approximately 12 to 16 feet with an unknown depth. The lateral was smaller in size with a top width of approximately 6 feet and a bottom width of approximately 2 feet; the depth of the lateral is approximately 4 feet. No noted changes in the canal were observed since its last recordation.



View of Beech Main Canal, facing west



View of Beech Canal lateral, facing south

Reference:

Clark, Tiffany, and Gena Severen (2023) Cultural Resources Assessment for the Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Facilities, Imperial County, California. Report prepared by Catalyst Environmental Solutions by PaleoWest, Monrovia, CA.

Clark, Tiffany, and Scott Torres (2023) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

PRIMARY RECORD

Primary #
HRI #

Trinomial
NRHP Status Code

Other Listings
Review Code

Reviewer

Date

Page 1 of 6

*Resource Name or #: Beech Canal and Drain

P1. Other Identifier:

*P2. Location: ☐ Not for Publication ☒ Unrestricted

a. County: Imperial

b. USGS 7.5' Quad: Heber, CA

Date: 1960 T 16S; R 14E of Sec 3, 4, and 10 ; S.B.B.M.

c. Address: none

City:

Zip:

d. UTM: Zone: 11 west end ; 635960 mE/ 3619130 mN; east end: 639023 mE/ 3618340 mN

e. Other Locational Data: Beech Canal and Drain are located south of the Central Main Canal. Documented portion of resource is west of Kloke Road and east of South Clark Road.

*P3a. **Description:** The Beech Canal is a 6.5-mile-long structure that originates off the Central Main Canal in Calexico and drains into the New River. Several smaller laterals diverge off the north and south sides of the canal along its length. The Beech Canal is an open, concrete-lined, trapezoidal-shaped structure that has a top width of approximately 12 to 16 feet and an unknown depth. The laterals are slightly smaller in size with a top width of 8 to 10 feet and a bottom width of approximately 2 feet; the depth of the laterals is approximately 4 feet. Based on a contractor's date stamp, portions of the smaller lateral canals were lined with concrete in 2012. The laterals have numerous check/drop structures, which consist of single gates with chute and cement walls that operate with a jack-type lifting mechanism resting on a metal or wooden cross beam. The condition of the gates and hardware associated with these features suggest they have been replaced at some point and are not original to the structure. Historic topographic maps indicate that the canal and its laterals were built between 1907 and 1915.

The Beech Canal irrigation system also includes a series of dirt-lined drainage ditches that remove excess water from the irrigated fields. The largest of these is the Beech Drain, which measures 20 to 26 feet in width with a depth of 6 to 8 feet (see continuation sheet). The drainage system associated with the Beech Canal likely post-dates the construction of the irrigation canals. The drainage system, which is associated with the Beech Canal irrigation lateral, appears to have been built by the IID sometime in the late 1920s or 1930s.

*P3b. **Resource Attributes:** HP20. Canal

*P4. **Resources Present:** ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. **Description of Photo:** View of Beech Canal irrigation system lateral, facing north, 2/23/2023

*P6. **Date Constructed/Age and Sources:** ☒ Historic ☐ Prehistoric ☐ Both Constructed by 1915, according to historical topographic maps

*P7. **Owner and Address:**
Imperial Irrigation District
333 E Barioni Blvd
Imperial, CA 92251

*P8. **Recorded by:**
Tiffany Clark
PaleoWest
17 Ivy Avenue
Monrovia, CA 91016

*P9. **Date Recorded:** 2/23/2023

*P10. **Survey Type:** Pedestrian Survey

*P11. **Report Citation:** Tiffany Clark (2023) Cultural Resources Assessment for the Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Facilities, Imperial County, California. Report prepared by Catalyst Environmental Solutions by PaleoWest, Monrovia, CA.

*Attachments: ☐ NONE ☒ Location Map ☒ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 2 of 6

*NRHP Status Code

*Resource Name or # Beech Canal and Drain

B1. Historic Name: Beech Canal and Drain

B2. Common Name: Beech Canal and Drain

B3. Original Use: Irrigation canal and drainage system B4. Present Use: Irrigation canal and drainage system

*B5. Architectural Style: N/A

*B6. Construction History: (Construction date, alterations, and date of alterations)

Beech Canal constructed by 1915.

*B7. Moved? ☒No ☐Yes ☐Unknown Date: N/A

Original Location: N/A

*B8. Related Features: Associated features include several laterals and drainages that diverge off the north and south side of the Beech Canal. The laterals have numerous check/drop structures, which consist of single gates with chute and cement walls that operate with a jack-type lifting mechanism resting on a metal or wooden cross beam. The condition of the gates and hardware associated with these features suggest they have been replaced at some point and are not original to the structure. Historic topographic maps indicate that the laterals were constructed between 1907 and 1915.

The Beech Canal irrigation system also includes a series of dirt-lined drainage ditches that remove excess water from the irrigated fields. The largest of these is the Beech Drain, which measures 20 to 26 feet in width with a depth of 6 to 8 feet. The Beech Drain runs along the southern edge of the Central Main Canal in a westward direction for a distance of approximately 1.5 miles to empty into the New River. The drainage system, which is associated with the Beech Canal irrigation lateral, appears to have been built by the Imperial Irrigation District sometime in the late 1920s or 1930s (Dowd 1956:70-71).

B9a. Architect: Unknown

b. Builder: Imperial Irrigation District

*B10. Significance: Theme: Irrigation Distribution Systems

Area: Heber

Period of Significance: N/A

Property Type: Channel

Applicable Criteria: N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Imperial Irrigation District (IID) was formed in 1911 under a state charter to acquire properties of the bankrupt California Development Company. By 1922, the IID had acquired 13 water companies and between 1930 and 1940, the All-American Canal was built to replace the Alamo Canal (Dowd 1956:88). The All-American Canal provided reliable water to the valley from the Colorado River and by 1942, became the sole source of imported water for the Imperial Valley.

Three major distribution canals channel water throughout the valley: East Highline, Central Main, and Westside Main canals (CH2M Hill 2001). The three canals service different portions of the valley: the East Highline Canal serves IID's area east of the Alamo River, the Central Main Canal serves the area between the Alamo River and the New River; and the Westside Main Canal serves the

See CONTINUATION FORM

B11. Additional Resource Attributes: (List attributes and codes) N/A

*B12. References:

See CONTINUATION FORM.

B13. Remarks: N/A

*B14. Evaluator:

Tiffany Clark
PaleoWest
17 Ivy Avenue
Monrovia, CA 91016

*Date of Evaluation: 2/24/23

(Sketch Map with north arrow required.)

See attached Sketch Map.

*Recorded by: Tiffany Clark

*Date: 2/23/2023

☒ Continuation

☐ Update

*B10. Significance (continued)

area west of the New River. The Beech Canal diverges off the Central Main Canal in the town of Calexico and runs in a westward direction through the central portion of the IID. Following its construction, a network of irrigation laterals and associated drainage system was constructed off the Beech Canal. Although the exact date of construction of the canal is not known, historic topographic maps indicate it was operational by 1915 with the drainage system constructed in the 1920s or 1930s (United States Geological Survey 1907; Dowd 1956:70-71).

CRHR Evaluation. The Beech Canal and Drain are part of the IID's CM canal system, which was initially constructed in the early twentieth century. The construction and operation of the canal and its associated laterals and drainage systems can be considered an important event in the early settlement of the Imperial Valley. The canal systems that were built at this time significantly increased the agricultural productivity of the area between the New River and Alamo River.

Because the Beech Canal and Drain can be directly associated with historical events that have made a significant contribution to the broad patterns of our history, it is recommended eligible under Criterion 1. The Beech Canal and Drain was funded and constructed by the IID and cannot be attributed to a specific individual. Because it cannot be associated with the lives of persons important in our past, it does not meet CRHR Criterion 2. The Beech Canal and Drain and its associated laterals and drainage systems are simple in design and construction and utilitarian in nature, and their construction does not represent any innovative design or building technique. Therefore, the resource does not exhibit any distinctive characteristics or engineering merits that would suggest it is significant under Criterion 3. Finally, the Beech Canal and Drain does not have the potential to yield any information important to the study of twentieth century channel construction and is therefore not eligible under Criterion 4.

The alignment of the Beech Canal and Drain has not changed since its construction in the early part of the twentieth century and as such, the resource retains integrity of location. Although agricultural fields are still prevalent in the vicinity of the CM Canal, the construction and operation of industrial and energy facilities in the immediate vicinity has resulted in the loss of the resource's integrity of setting, feeling, and association. The resource has experienced extensive alterations including lining portions of the canal with concrete and the replacement of gates and hardware. As a result of these alterations, the structure lacks integrity of design, workmanship, and materials. Due to the loss of integrity, the Beech Canal and Drain has lost its ability to convey its significance under Criterion 1.

Based on these findings, PaleoWest recommends the Beech Canal and Drain not eligible for inclusion in the CRHR.

*B12. References:

CH2M Hill

- 2001 Habitat Conservation Plan IID Water Conservation and Transfer Project. Chapter 2. Electronic document accessed September 9, 2022. Online at: <https://www.iid.com/home/showpublisheddocument/1492/635648001335730000>

Dowd, M.J.

- 1956 *IID – The First 40 Years*. Imperial Irrigation District, El Centro, California.

U.S. Geological Survey (USGS)

- 1907 *Holtville, California* (1:125,000) topographic quadrangle. Washington, D.C.

*Recorded by: Tiffany Clark

*Date: 2/23/2023

☒ Continuation

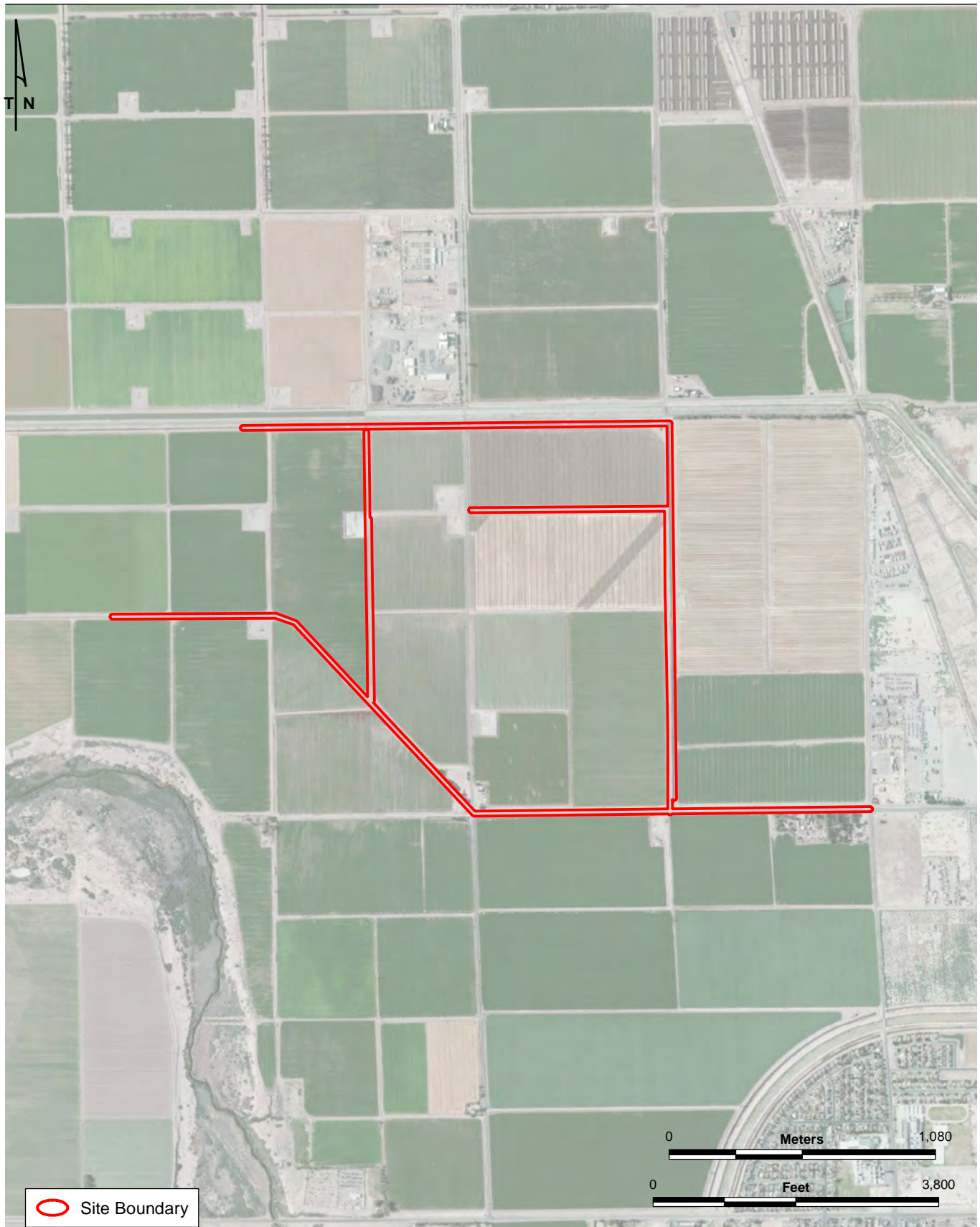
☐ Update

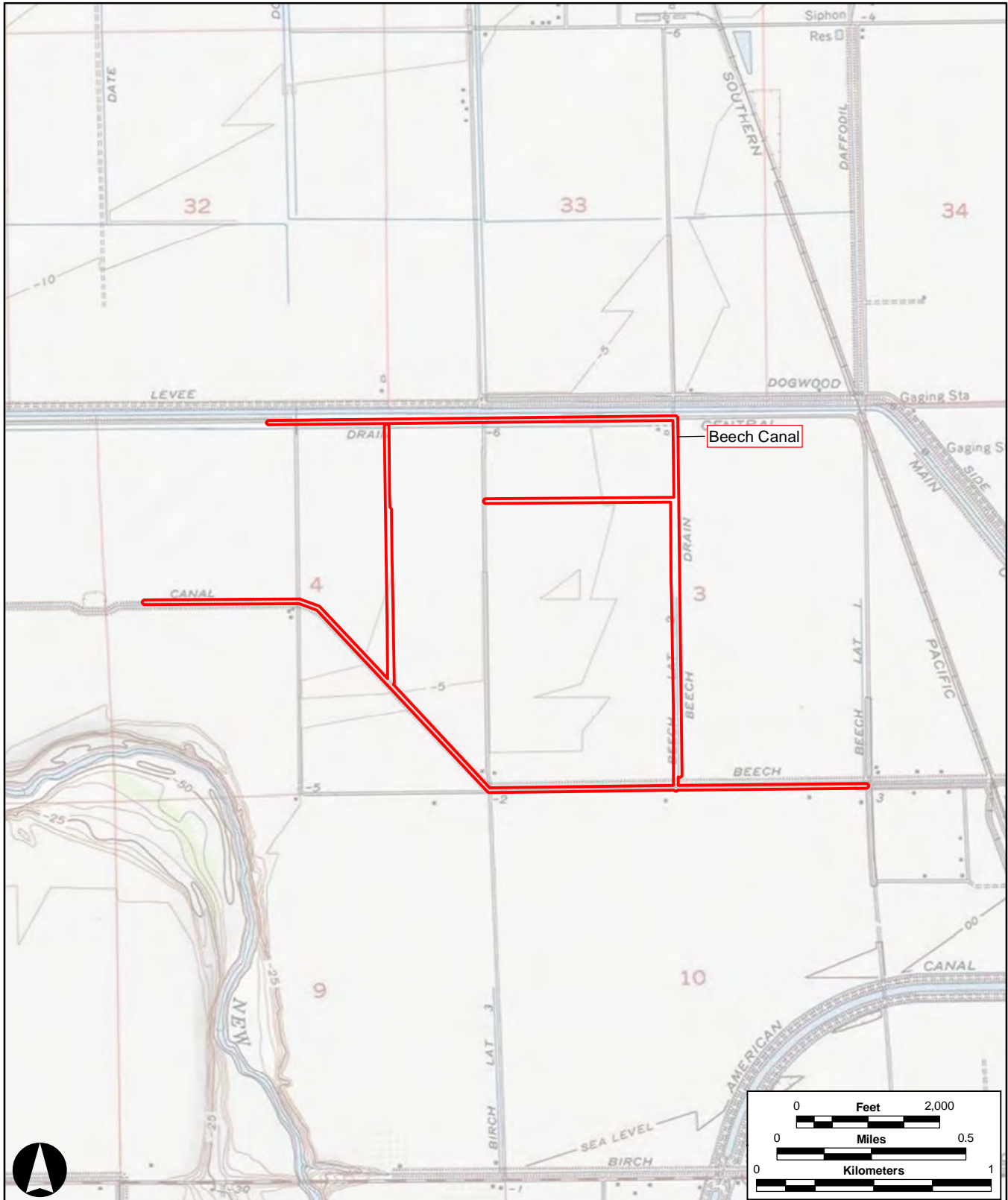


Portion of Beech Canal lateral channel with 2012 concrete date stamp, facing west



Beech Drain north of the proposed parasitic solar photovoltaic facilities site, facing west





CONTINUATION SHEET

Property Name: _____ Niland to Calexico Railroad

Page 1 of 1

The Niland to Calexico Railroad (P-13-008682) was initially recorded in 2003 by the Imperial Valley Desert Museum. The resource consists of an approximately 40-mile-long rail line that branches off the Southern Pacific Railway at Niland and extends in a roughly southerly direction to Calexico. It is composed of a standard gauge track on a gravel base. Constructed in 1903, the railroad connected the main Southern Pacific line with cities in Imperial County. By 1904, the line had been extended to Calexico. The line is still in use to transport goods from Mexico and the Imperial County to the rest of the United States.

In October 2023, Chronicle Heritage conducted a survey for the proposed Heber 1 Solar Project (Clark and Torres 2023). As part of the field work effort, a portion of the railroad north of Jasper Road between Ware Road and Pfizer Road (Sections 28 and 33, Township 16 South, Range 14 East) was revisited. The railroad consists of a single set of tracks resting on a gravel ballast (see photograph). The ballast is approximately 18 to 20 feet in width with the height of approximately 2 to 3 feet. A utility line consisting of single wooden pole runs along the eastern side of the railroad alignment. The tracks appear to be in good condition.



View of P-13-008682 between Ware and Pfizer Roads, facing north.

Reference: Clark, Tiffany, and Scott Torres (2023) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code:

Other Listings
Review Code

Reviewer

Date

Page 1 of 7

*Resource Name or #: 602 Dogwood Road

P1. Other Identifier: 602 Dogwood Road

***P2. Location:** ☐ Not for Publication ☒ Unrestricted

*a. County: Imperial and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: Heber Date: 2022 T17S; R14E; Sec 3; S.B. B.M.

c. Address: 602 Dogwood Road City: Zip: 92231

d. UTM (Give more than one for large and/or linear resources) Zone: 637460 mE/ 3618410 mN.

Other Locational Data: (e.g., parcel directions to resource, elevation, etc., as appropriate): APN 059-020-001

***P3a. Description** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries):

The resource consists of a residential and accessory building. The primary building is a modest vernacular single-family residence that is clad in T1-11 siding and features a low-pitched side-gabled roof that is sheathed in composition shingles. The building appears to have vinyl window units and a solid, single panel entryway door. Additional views of the building reveal a flat roofed porch overhang that is appended to the building and held up by square posts that extend vertically from the ground. One façade remains obscured by a fifth-wheel vehicle trailer. The accessory building is located adjacent to the northeast corner of the residence and appears to be used as a utility shed. The dilapidated wood building includes an open doorway and flat roof. The building is clad in a combination of oriented strand board (OSB) and plywood sheathing. The single-family residence is setback onto the northeast corner of the agricultural parcel. The single-family residence and utility shed are accessible from South Dogwood Road. The building is in fair condition and is in a rural setting. The boundary is limited to the legal parcel boundary. (See Continuation Sheet page 4)

***P3b. Resource Attributes** (List attributes and codes): HP2. Single Family Property

***P4. Resources Present:** ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo (view, date, accession #):

Primary façade
October 27, 2023

***P6. Date Constructed/Age and Source:**

☒ Historic ☐ Prehistoric ☐ Both
1959 Field Estimate

***P7. Owner and Address:**

THOMSON FOUNDATION PROPERTIES LLC
1235 North Loop
Houston, TX 77008

***P8. Recorded by** (Name, affiliation, and address):

Scott Torres
Chronicle Heritage
55 Huntington Drive
Arcadia, CA 91106

***P9. Date Recorded:** November 14, 2023

***P10. Survey Type** (Describe): Intensive

***P11. Report Citation** (Cite survey report and

other sources, or enter "none"): Clark, Tiffany, and Scott Torres (2023) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

Attachments: ☐ NONE ☒ Location Map ☒ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

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*Resource Name or #: 602 Dogwood Road

B1. Historic Name: 602 Dogwood Road

B2. Common Name: 602 Dogwood Road

B3. Original Use: Single-family Residence

B4. Present Use: Single-Family Residence

***B5. Architectural Style:** N/A

***B6. Construction History:** (Construction date, alterations, and date of alterations)

Based on a review of the Imperial County Assessor Records, there does not appear to be any recorded information in the public administrative record associated with the single-family residence on the parcel. Therefore, a date of construction for the residence building and utility shed was not determined. No information including building permits were available for review.

***B7. Moved?** ☒ No ☐ Yes ☐ Unknown **Date:**

Original Location: N/A

***B8. Related Features:** N/A

B9a. Architect: Unknown

b. Builder: Unknown

***B10. Significance: Theme:** NA

Area: Callexico

Period of Significance: Circa 1959 **Property Type:** Residence

Applicable Criteria: N/A (Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Based on a review of historical aerial photographs and topographic maps of the parcel, it appears that a building was on the site as early as 1943. The utility shed appears to have been added alongside the single-family residence building sometime between 1959 and 1996. Based on aerial photographs the parcel remained undeveloped beyond the single-family residence and the utility shed between 1959 and the present.

The County of Imperial was founded on August 15, 1907. It was the last county to be organized in California and measures 4,087 square miles in area (O'Dell 1957:8). Largely unoccupied by Euro-Americans through much of the early nineteenth century, the historic development of the western portion of Imperial County has been influenced by three major water bodies. These include the Salton Sea, the Alamo River, and the New River, the latter of which lies less than 1 mile southwest of the Project area. (See Continuation Sheet page 7)

B11. Additional Resource Attributes (List attributes and codes): None.

***B12. References:** See Continuation Sheet page 11.

***B13. Remarks:** None.

***B14. Evaluator:**

Scott Torres
Chronicle Heritage
55 Huntington Drive
Arcadia, CA 91106

***Date of Evaluation:** November 14, 2023

(Sketch Map with north arrow required.)

See attached sketch map

(This space reserved for official comments.)

*P3a. Description: (Continued from Primary Record page 1)



Primary/Southern Façade (view north)



Eastern Façade (view west)

Utility Shed Building



Southern Facade (view north)

State of California — Natural Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI #
Trinomial

Page 5 of 7

*Resource Name or #: 602 Dogwood Road

***B10. Significance:** (Continued from Building, Structure, Object Report page 2)

Cotton became a major industry in the vicinity of the Project area with 50,000 acres of land in the county devoted to its cultivation in 1914 (McGroarty 1914:27). Alfalfa was another important crop, but as production exceeded demand, it became too expensive to export. As a result, dairy farming became a growing industry, with 2,000 dairies opening in the valley to make use of the surplus alfalfa (Anderholt 1989:53). Historically, most of the land within the Project area has been owned by small-scale farms, some of which have been in operation since the early twentieth century. Although Imperial County is rich in a variety of mineral resources (e.g., clays, gypsum, and marble), mining does not appear to have developed as an important industry in the Project area.

A review of the available building permit records found no information on the architect or builder of the residence. Based on the absence of architectural ornamentation and styling, the single-family residence and utility shed building do not appear to be examples of any architectural style. Furthermore they do not appear to be the work of a master architect and builder.

The Imperial County Assessor online records do not identify a single-family residence building on the parcel. An additional Ancestry.com search of local directories and Census records did not provide any information regarding historic ownership of the single-family residence located at the address of record, 602 Dogwood Road. The Assessor's online records revealed that the property is currently owned by Thomson Foundation Properties, LLC based in Houston, Texas (Imperial County Assessor 2023).

CRHR Evaluation

Criterion 1

The subject property does not appear to be a significant building in Imperial County. A desktop review of historical issues of the *Imperial Valley Press* did not provide any information to assert that the single-family residence and utility shed building were associated with a pattern of development pertinent to state and local histories regarding dairy farming, alfalfa farming, and mining. Therefore, the building does not appear to be individually eligible for listing in the California Register of Historical Resources (California Register) pursuant to Criterion 1.

Criterion 2

Research does not indicate the subject property is associated with a person or persons of historic significance at the state level; therefore, the buildings are not eligible for listing in the California Register pursuant to Criterion 2.

Criterion 3

The subject property is a vernacular building that does not reflect a particular architectural style. Furthermore, the single-family residence and utility shed appear were constructed with common buildings materials, construction methods, and do not appear to stand out as a significant construction project. Lastly, the single-family residence and utility shed do not appear to be the work of a master architect and builder. Therefore, the buildings are not eligible for listing in the California Register pursuant to Criterion 3.

Criterion 4

The additional study of the buildings and structures at 602 Dogwood Road is unlikely to yield significant information on twentieth-century settlement in this area of the Imperial County. As a result, the resource is not recommended eligible for listing in the CRHR under Criterion 4.

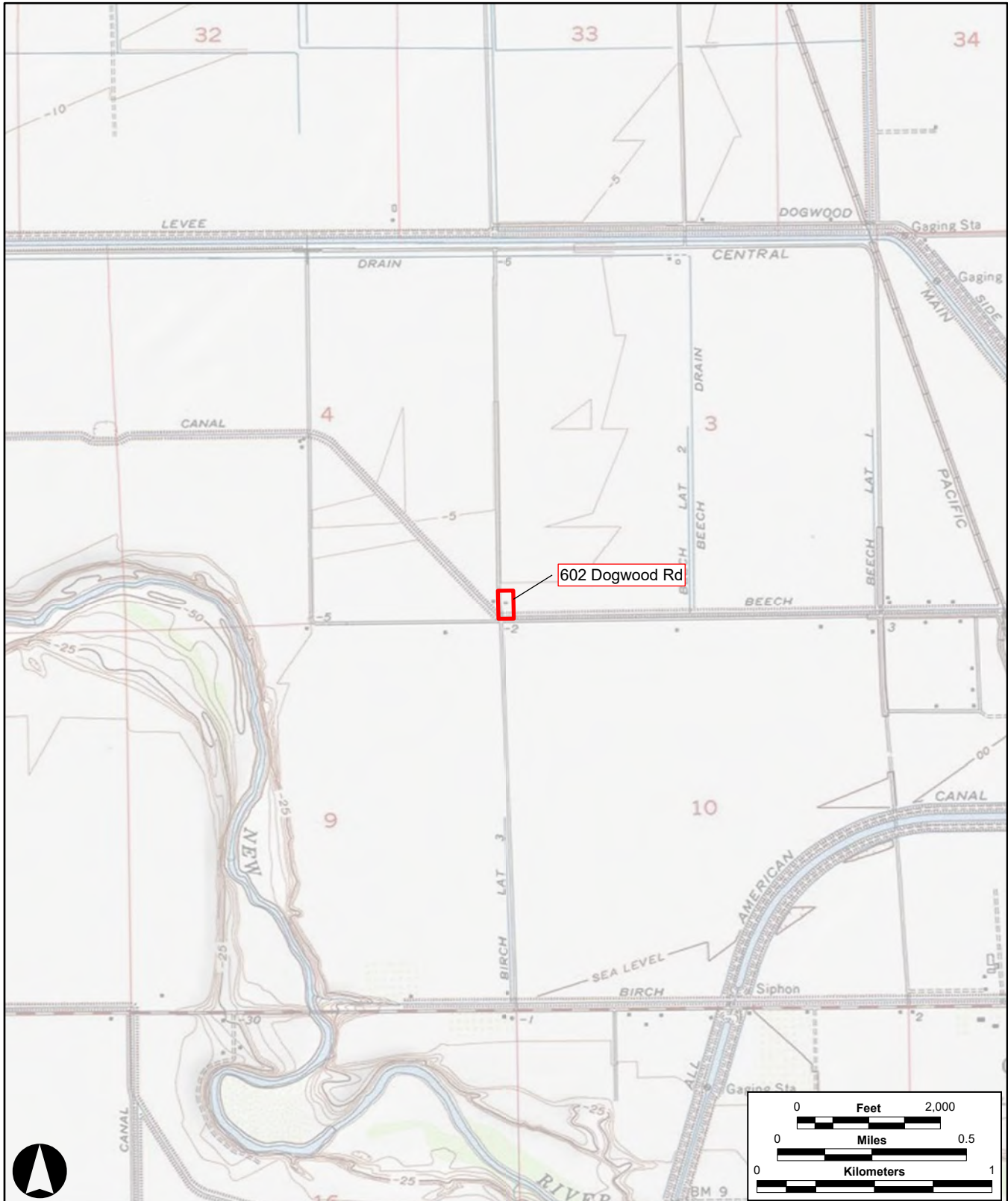
***B12. References:** (Continued from Building, Structure, Object Report page 2)

Anderholt, Joseph D. 1961. *Desert Dairies: Catalyst for the Development of Imperial Valley*. Imperial County Historical Society.

O'Dell, Scott

1957 *Country of the Sun: Southern California; An Informal History and Guide*. Thomas Y. Crowell Company, New York.

"602 Dogwood Road, Calexico CA, 92231," *Imperial County Assessor*, accessed November 14, 2023, <https://assessor.imperialcounty.org/>





PRIMARY RECORD

Primary #
HRI #

Trinomial
NRHP Status Code

Other Listings
Review Code

Reviewer

Date

Page 1 of 6

*Resource Name or #: Daffodil Canal and Lateral

P1. Other Identifier:

*P2. Location: ☐ Not for Publication ☒ Unrestricted

a. County: Imperial

b. USGS 7.5' Quad: Heber, CA

Date: 1960 T 16S; R 14E of Sec 34 ; S.B.B.M.

c. Address: none

City:

Zip:

d. UTM: Zone: 11 south end ; 638990 mE/ 3620020 mN; north end: 638960 mE/ 3621595 mN

e. Other Locational Data: Daffodil Canal parallels the Pfizer Road. Documented portion of resource run north from a point at the Pfizer Road and Jasper Road for a distance of 1 mile.

*P3a. Description: The Daffodil Canal branches off the Central Main Canal near the Pfizer Road and Jasper Road intersection. It runs north along the west side of Pfizer Road for approximately 1 mile. A 440-foot-long portion of the canal east of Heber 1 Geothermal Energy Facilities is buried. One 0.5-mile-long, east-west running lateral canal (Daffodil Lateral 1) extends off of the Daffodil Canal just north of the Heber 1 Geothermal Energy Facilities. Although the date of construction of the canal and lateral is not known, historical maps indicate that it was operational by 1940.

The recorded canal segment consists of an open concrete-lined channel that has a top width ranging from approximately 18 to 20 feet with an unknown depth (see photograph). The lateral is also concrete lined with a width of approximately 10 feet and an unknown depth.

*P3b. Resource Attributes: HP20. Canal

*P4. Resources Present: ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: View of Daffodil Canal, facing north, 10/27/2023

*P6. Date Constructed/Age and Sources:

☒ Historic ☐ Prehistoric ☐ Both
Constructed by 1940, according to historical topographic maps

*P7. Owner and Address:

Imperial Irrigation District
333 E Barioni Blvd
Imperial, CA 92251

*P8. Recorded by:

Tiffany Clark
Chronicle Heritage
55 East Huntington Drive
Arcadia, California, 91006

*P9. Date Recorded: 10/27/2023

*P10. Survey Type: Pedestrian Survey

*P11. Report Citation: Clark, Tiffany, and Scott Torres (2023) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report

prepared by Chronicle Heritage, Arcadia, California.

*Attachments: ☐ NONE ☒ Location Map ☒ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

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*NRHP Status Code

*Resource Name or # Daffodil Canal

B1. Historic Name: Daffodil Canal

B2. Common Name: Daffodil Canal

B3. Original Use: Daffodil Canal B4. Present Use: Irrigation canal

*B5. Architectural Style: N/A

*B6. Construction History: (Construction date, alterations, and date of alterations)

Daffodil Canal was constructed by 1940.

*B7. Moved? ☒No ☐Yes ☐Unknown Date: N/A

Original Location: N/A

*B8. Related Features: The recorded canal segment consists of an open concrete-lined channel that has a top width ranging from approximately 18 to 20 feet. A 440-foot-long section of the canal adjacent to the Heber 1 Geothermal Energy Facilities has been buried. A concrete-lined lateral extends off of the canal north of the Heber 1 Geothermal Energy Facilities and runs west for a distance of 0.5 mile. The lateral is approximately 10 feet in width. At the time of the survey, the Daffodil Canal and lateral contained water so the depth of the structures could not be determined. The exact date of construction is not known. However, historical maps indicate that the canal was operational by 1940 (USGS 1940). A review of historic aerial images indicates that the canal was buried sometime between 1959 and 1984 and likely was associated with the development of the Heber 1 Geothermal Energy Facilities. See CONTINUATION FORM.

B9a. Architect: Unknown

b. Builder: Imperial Irrigation District

*B10. Significance: Theme: Irrigation Distribution Systems

Area: Heber

Period of Significance: N/A

Property Type: Channel

Applicable Criteria: N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Imperial Irrigation District (IID) was formed in 1911 under a state charter to acquire properties of the bankrupt California Development Company. By 1922, the IID had acquired 13 water companies and between 1930 and 1940, the All-American Canal was built to replace the Alamo Canal (Dowd 1956:88). The All-American Canal provided reliable water to the valley from the Colorado River and by 1942, became the sole source of imported water for the Imperial Valley.

Three major distribution canals channel water throughout the valley: East Highline, Central Main, and Westside Main canals (CH2M Hill 2001). The three canals service different portions of the valley: the East Highline Canal serves IID's area east of the Alamo River, the Central Main Canal serves the area between the Alamo River and the New River; and the Westside Main Canal serves the

See CONTINUATION FORM

B11. Additional Resource Attributes: (List attributes and codes) N/A

*B12. References:

See CONTINUATION FORM.

B13. Remarks: N/A

*B14. Evaluator:

Tiffany Clark

Chronicle Heritage

55 East Huntington Drive

Arcadia, California, 91006

*Date of Evaluation: 10/27/23

(Sketch Map with north arrow required.)

See attached Sketch Map.

*Recorded by: Tiffany Clark

*Date: 10/27/2023

☒ Continuation

☐ Update

* B8. Related Features (continued)

The Daffodil Canal has at least two check/drop structures along its course, each of which consist of gates with chute and cement walls that operate with a jack-type lifting mechanism resting on a wooden cross beam (see photographs on continuation sheet). The checks/drop structures have curved cement headwalls on their upstream side and straight cement headwalls on their downstream side. The condition of the gates and hardware associated with these features suggest they have been replaced at some point and are not original to the structure.

Along much of its alignment, the Daffodil Canal is flanked by dirt and paved roads. The canal run through an underground pipeline under Jasper Road.

*B10. Significance (continued)

area west of the New River. The Daffodil Canal diverges off the Central Main Canal at Pfizer Road and runs north paralleling the roadway for 1 mile. Although the date of construction of the canal is not known, historical maps indicate that it was operational by 1940 (USGS 1940).

CRHR Evaluation. The Daffodil Canal and Lateral is a part of the IID's Central Main canal system, which was initially constructed in the early twentieth century. The construction and operation of the Daffodil Canal and its associated lateral can be considered an important event in the early settlement of the Imperial Valley. The canal systems that were built at this time significantly increased the agricultural productivity of the area between the New River and Alamo River. Because the Daffodil Canal and Lateral can be directly associated with historical events that have made a significant contribution to the broad patterns of our history, it is recommended eligible under Criterion 1. The Daffodil Canal was funded and constructed by the IID and cannot be attributed to a specific individual. Because it cannot be associated with the lives of persons important in our past, it does not meet CRHR Criterion 2. The Daffodil Canal and its associated laterals are simple in design and construction and utilitarian in nature, and their construction does not represent any innovative design or building technique. Therefore, the resource does not exhibit any distinctive characteristics or engineering merits that would suggest it is significant under Criterion 3. Finally, the Daffodil Canal does not have the potential to yield any information important to the study of twentieth century channel construction and is therefore not eligible under Criterion 4.

The alignment of the Daffodil Canal has not changed since its construction in the early part of the twentieth century and as such, the resource retains integrity of location. Although agricultural fields are still prevalent in the vicinity of the Daffodil Canal, the construction and operation of industrial energy facilities in the immediate vicinity has resulted in the loss of the resource's integrity of setting, feeling, and association. The resource has experienced extensive alterations including lining the canal with concrete, replacing gates and hardware, and burying portions of the canal. As a result of these alterations, the structure lacks integrity of design, workmanship, and materials. Due to the loss of integrity, the Daffodil Canal and Lateral have lost their ability to convey significance under Criterion 1.

Based on these findings, Chronicle Heritage recommends the Daffodil Canal and Lateral not eligible for inclusion in the CRHR.

*B12. References:

CH2M Hill

2001 Habitat Conservation Plan IID Water Conservation and Transfer Project. Chapter 2. Electronic document accessed September 9, 2022. Online at: <https://www.iid.com/home/showpublisheddocument/1492/635648001335730000>

Dowd, M.J.

1956 IID – *The First 40 Years*. Imperial Irrigation District, El Centro, California.

U.S. Geological Survey (USGS)

1940 *Heber, California* (15 minute) topographic quadrangle. Washington, D.C.

*Recorded by: Tiffany Clark

*Date: 10/27/2023

☒ Continuation

☐ Update



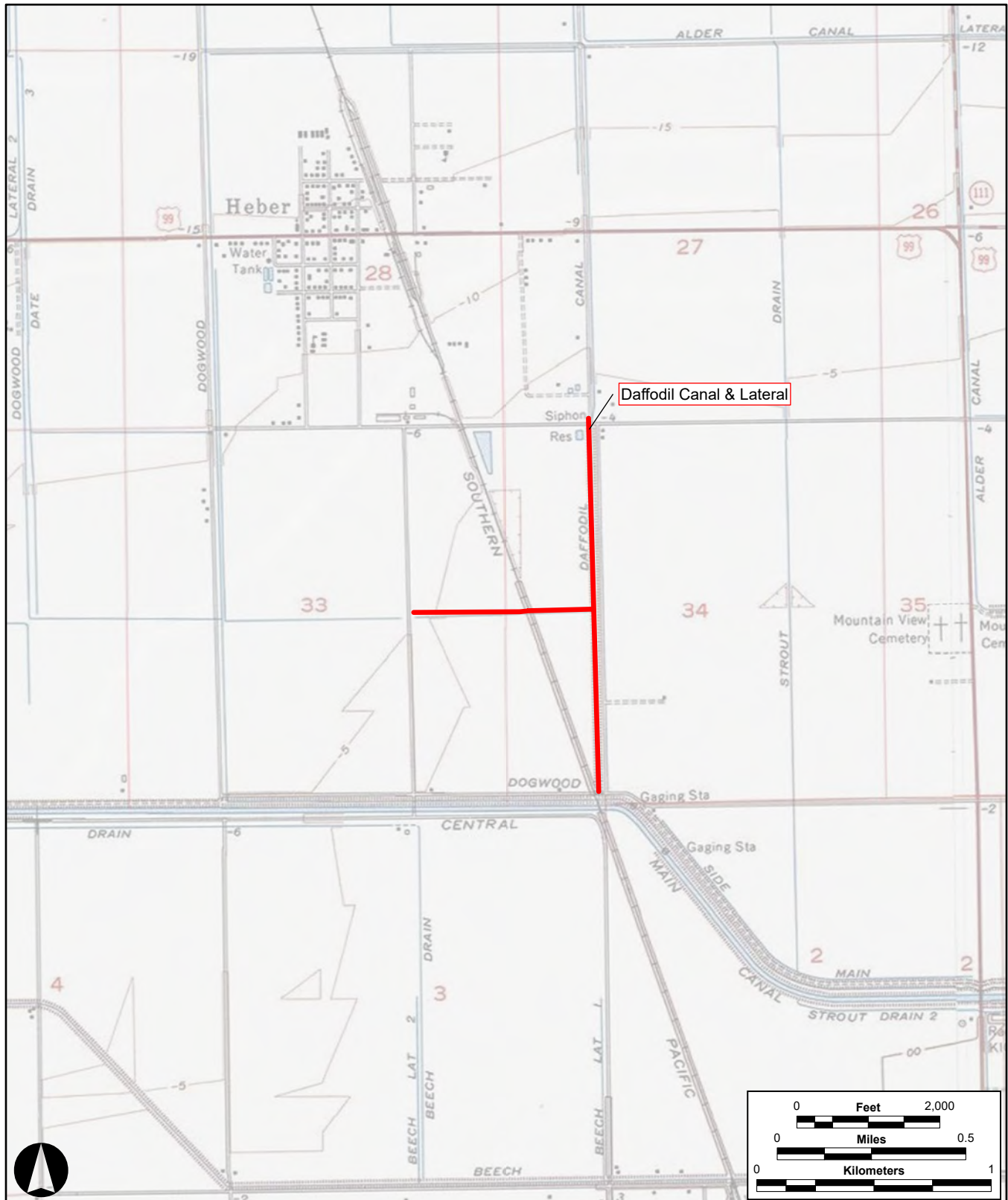
Portion of Daffodil Canal showing check/drop structure with Pfizer Road in background, facing east



Daffodil Canal and Irrigation Gate associated with Lateral 1, facing northwest



Buried portion of Daffodil Canal adjacent to Heber 1 Geothermal Energy Facilities, facing south





PRIMARY RECORD

Primary #
HRI #

Trinomial
NRHP Status Code

Other Listings
Review Code

Reviewer

Date

Page 1 of 6

*Resource Name or #: Date Drain No. 3

P1. Other Identifier:

***P2. Location:** ☐ Not for Publication ☒ Unrestricted

a. County: Imperial

b. USGS 7.5' Quad: Heber, CA

Date: 1960 T 16S; R 14E of Sec 33 ; S.B.B.M.

c. Address: none

City:

Zip:

d. UTM: Zone: 11 west end ; 637400 mE/ 3621160 mN; east end: 638160 mE/ 3620860 mN

e. Other Locational Data: Date Drain No. 3 lies 0.5-mile north of the Central Main Canal immediately east of Dogwood Road.

***P3a. Description:** The Date Drain No. 3 is a 0.70-mile-long, L-shaped drainage ditch that includes an approximately 0.25-mile-long segment that runs in a north-south direction paralleling the eastern side of Dogwood Road and a 0.55-mile-long segment of the drainage running west-east along the midsection of Section 33, Township 16 South, Range 14 East. The earthen drainage ditch was constructed to remove excess water from the irrigated fields and appears to be associated with the Date Canal. The upper width of the drainage is 20 to 30 feet with a depth of 8 to 10 feet. Although the Date Canal is depicted on a 1915 topographic map, the Date Drain No. 3 first appears on a 1957 topographic map.

***P3b. Resource Attributes:** HP20. Canal

***P4. Resources Present:** ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: View of Date Drain No. 3, facing east, 10/27/2023

***P6. Date Constructed/Age and Sources:**

☒ Historic ☐ Prehistoric ☐ Both
Constructed by 1957, according to historical topographic maps

***P7. Owner and Address:**

Imperial Irrigation District
333 E Barioni Blvd
Imperial, CA 92251

***P8. Recorded by:**

Tiffany Clark
Chronicle Heritage
55 East Huntington Drive
Arcadia, California, 91006

***P9. Date Recorded:** 10/27/2023

***P10. Survey Type:** Pedestrian Survey

***P11. Report Citation:** Clark, Tiffany, and Scott Torres (2023) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report

prepared by Chronicle Heritage, Arcadia, California.

***Attachments:** ☐ NONE ☒ Location Map ☒ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 2 of 6

*NRHP Status Code

*Resource Name or # Date Drain No. 3

B1. Historic Name: Date Drain No. 3

B2. Common Name: Date Drain No. 3

B3. Original Use: Date Drain No. 3

B4. Present Use: Drainage channel

*B5. Architectural Style: N/A

*B6. Construction History: (Construction date, alterations, and date of alterations)

Date Drain No. 3 was constructed by 1957.

*B7. Moved? ☒No ☐Yes ☐Unknown Date: N/A

Original Location: N/A

*B8. Related Features: The recorded drainage segment consists of an open earthen ditch that has a top width ranging from approximately 20 to 30 feet with a depth of 8 to 10 feet. The exact date of construction is not known. Historical maps indicate that the Date Canal was operational by 1915 (USGS 1915). However, the earliest map showing the Date Drain No. 3 dates to the late 1950s (USGS 1957).

B9a. Architect: Unknown

b. Builder: Imperial Irrigation District

*B10. Significance: Theme: Irrigation Distribution Systems

Area: Heber

Period of Significance: N/A

Property Type: Channel

Applicable Criteria: N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Imperial Irrigation District (IID) was formed in 1911 under a state charter to acquire properties of the bankrupt California Development Company. By 1922, the IID had acquired 13 water companies and between 1930 and 1940, the All-American Canal was built to replace the Alamo Canal (Dowd 1956:88). The All-American Canal provided reliable water to the valley from the Colorado River and by 1942, became the sole source of imported water for the Imperial Valley.

Three major distribution canals channel water throughout the valley: East Highline, Central Main, and Westside Main canals (CH2M Hill 2001). The three canals service different portions of the valley: the East Highline Canal serves IID's area east of the Alamo River, the Central Main Canal serves the area between the Alamo River and the New River; and the Westside Main Canal serves the

See CONTINUATION FORM

B11. Additional Resource Attributes: (List attributes and codes) N/A

*B12. References:

See CONTINUATION FORM.

B13. Remarks: N/A

*B14. Evaluator:

Tiffany Clark
Chronicle Heritage
55 East Huntington Drive
Arcadia, California, 91006

*Date of Evaluation: 10/27/23

DPR 523E (1/95)

*Required information

(Sketch Map with north arrow required.)

See attached Sketch Map.

*Recorded by: Tiffany Clark

*Date: 10/27/2023

☒ Continuation

☐ Update

***B10. Significance (continued)**

area west of the New River. The Date Drain No. 3 is associated with the Date Canal, which extends off north of the Central Canal at South Clark Road. Although the date of construction of the canal is not known, historical maps indicate that it was operational by 1915 (USGS 1915). Date Drain No. 3 was likely constructed sometime thereafter and first appears on a 1957 topographic map (USGS 1957).

CRHR Evaluation. The Date Canal is part of the IID's Central Main canal system, which was constructed in the early twentieth century. The construction and operation of the IID irrigation canals can be considered an important event in the early settlement of the Imperial Valley. The canal systems that were built at this time significantly increased the agricultural productivity of the area between the New River and Alamo River. Although the Date Canal is associated with historical events that have made a significant contribution to the broad patterns of our history, Date Drain No. 3 is a minor component of the irrigation system whose construction appears to postdate the Date Canal by several decades. Because the drainage cannot be directly associated with events that significantly contributed to the broad patterns of our history, it is not recommended eligible under Criterion 1. The Date Drain No. 3 was likely funded and constructed by the IID and cannot be attributed to a specific individual. Because it cannot be associated with the lives of persons important in our past, it does not meet CRHR Criterion 2. Date Drain No. 3 is simple in design and construction and utilitarian in nature, and its construction does not represent any innovative design or building technique. Therefore, the resource does not exhibit any distinctive characteristics or engineering merits that would suggest it is significant under Criterion 3. Finally, Date Drain No. 3 does not have the potential to yield any information important to the study of twentieth century irrigation construction and is therefore not eligible under Criterion 4.

Based on these findings, Chronicle Heritage recommends the Date Drain No. 3 not eligible for inclusion in the CRHR.

***B12. References:**

CH2M Hill

2001 Habitat Conservation Plan IID Water Conservation and Transfer Project. Chapter 2. Electronic document accessed September 9, 2022. Online at: <https://www.iid.com/home/showpublisheddocument/1492/635648001335730000>

Dowd, M.J.

1956 *IID – The First 40 Years*. Imperial Irrigation District, El Centro, California.

U.S. Geological Survey (USGS)

1915 *El Centro, California* (30 minute) topographic quadrangle. Washington, D.C.

1957 *Heber, California* (7.5 minute) topographic quadrangle. Washington, D.C.

*Recorded by: Tiffany Clark

*Date: 10/27/2023

☒ Continuation

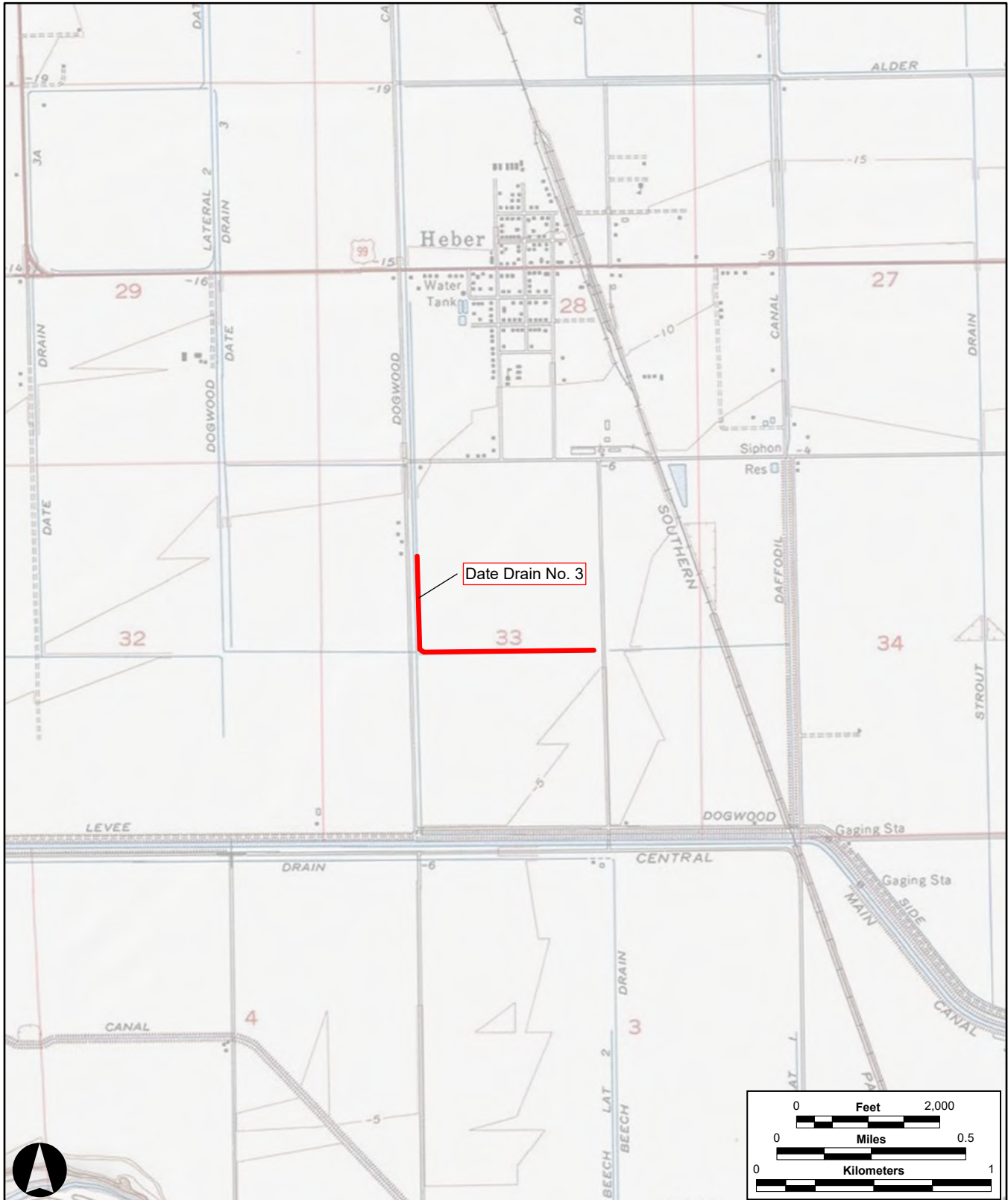
☐ Update



East end of Date Drain No. 3, facing west



Overview of Date Drain No. 3 east of Dogwood Road, facing east







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CONTINUATION SHEET

Property Name: Niland to Calexico Railroad

Page 2 of 2



Niland to Calexico Railroad (P-13-008682) between Ware and Pfizer Roads with Heber 1 to the left. View to the east-southeast.



Niland to Calexico Railroad (P-13-008682) between Ware and Pfizer Roads. View to the northwest.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P-13-008682 UPDATE
HRI #
Trinomial CA-IMP-8166H UPDATE
NRHP Status Code

Other Listings
Review Code

Reviewer

Date

Page 1 of 5

*Resource Name or #: CA-IMP-8166H

P1. Other Identifier: Niland to Calexico Railroad

*P2. Location: ☒ Not for Publication ☐ Unrestricted

*a. County: Imperial

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: Niland Date: 1978 T 12S, R 14E; ¼ of ¼ of Sec 10; S.B.B.M.

c. Address:

City:

Zip:

d. UTM: NAD 83 Zone: 11; Western Wall (center point): 639073mE, 3668618mN

Eastern Wall (center point): 639089mE, 3668619mN

North end of rail update: 639081mE, 3668619mN

South end of rail update: 639098mE, 3667195mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
Resource CA-IMP-8166H is the Niland to Calexico Railroad, which was constructed between 1902 and 1904 by the Southern Pacific Company and runs 65 miles from Niland to Calexico. The resource was recorded in 2003 by Collins and Pflaum as a standard gauge track on a gravel base and is still in use today.

A portion of the Niland to Calexico Railroad (CA-IMP-8166H) was updated as part of this survey. (see continuation sheets)

*P3b. Resource Attributes: (List attributes and codes) AH7: Railroad grade; AH11: Wall

*P4. Resources Present: ☐ Building ☐ Structure ☐ Object ☒ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #) Culvert undercrossing – Eastern Wall, 9/ 14/ 11, view to the west, Photo# 011. (see continuation sheets for additional photos)

*P6. Date Constructed/Age and

Sources: ☒ Historic

☐ Prehistoric ☐ Both

*P7. Owner and Address:

Union Pacific Railroad

*P8. Recorded by: (Name, affiliation, and address)

C. Ehringer

ESA

626 Wilshire Blvd. Ste 1100

Los Angeles, CA

*P9. Date Recorded: 9/ 14/ 2011

*P10. Survey Type: (Describe)

Intensive pedestrian

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Collins, Karen and J. Michel Pflaum, Site Record for CA-IMP-8166H, document on file at South Coastal Information Center, 2003.

*Attachments: ☐ NONE ☒ Location Map ☒ Sketch Map ☒ Continuation Sheet ☐ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other (List):

DPR 523A (1/95)

*Required information

*Recorded by: C. Ehringer

*Date: 9/ 14/ 11

☒ Continuation

☐ Update

***P3a. Description:** CA-IMP-8166H, the Niland to Calexico railroad, crosses the westernmost portion of the project area. Dates painted on the rails in this area indicate that they were replaced from March 26-30, 1999. One new feature (Feature 1) of the railroad was recorded during the survey. Feature 1 consists of a culvert undercrossing at the intersection of Lindsey Road and the rail line. Rock and cement diversion walls bracket either side of a concrete pipe (48 inch diameter) that crosses under the rail line. The walls are composed of thin slabs of shale-like rock stacked horizontally on top of each other and held together by cement mortar. The walls are poorly constructed and appear to have been built in haste. The cement mortar contains small pebbles and is very friable. The wall on the western side of the railroad line is in disrepair and appears to have partially collapsed into the adjacent canal. The wall on the eastern side of the railroad line is in good condition. No dates of construction or other markings were observed in the cement.

Feature 1 - Western wall measurements:

Height: varies from 98.5 inches in north to 73 inches in south

Width: varies from 10 to 12 inches

Feature 1 - Eastern wall measurements:

Height: varies from 81 to 91 inches

Width: varies from 10 to 12 inches

P5a. Photo or Drawing:



P5b. Description of Photo: Feature 1, Western Wall, view to the east, Photo#2

*Recorded by: C. Ehringer

*Date: 9/ 14/ 11

☒ Continuation

☐ Update

P5a. Photo or Drawing:



P5b. Description of Photo: CA-IMP-8166H, portion of rails in project area, view to the south, Photo#7

P5a. Photo or Drawing:



P5b. Description of Photo: CA-IMP-8166H, date on rails, view to the west, Photo#15

LOCATION MAP

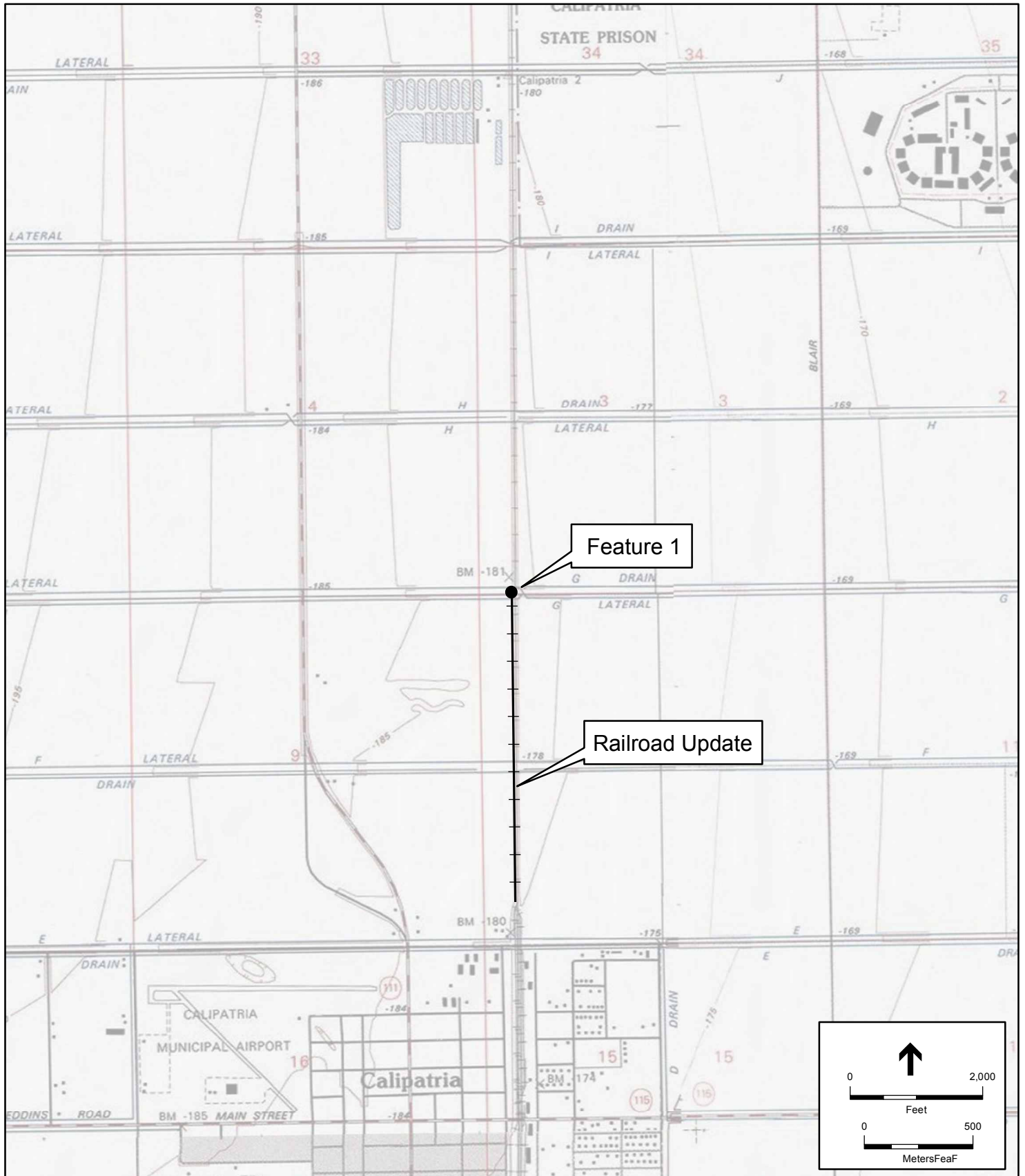
Trinomial: CA-IMP-8166H

Page 2 of 5

* Resource Name or Number: CA-IMP-8166H

*Map name: Niland

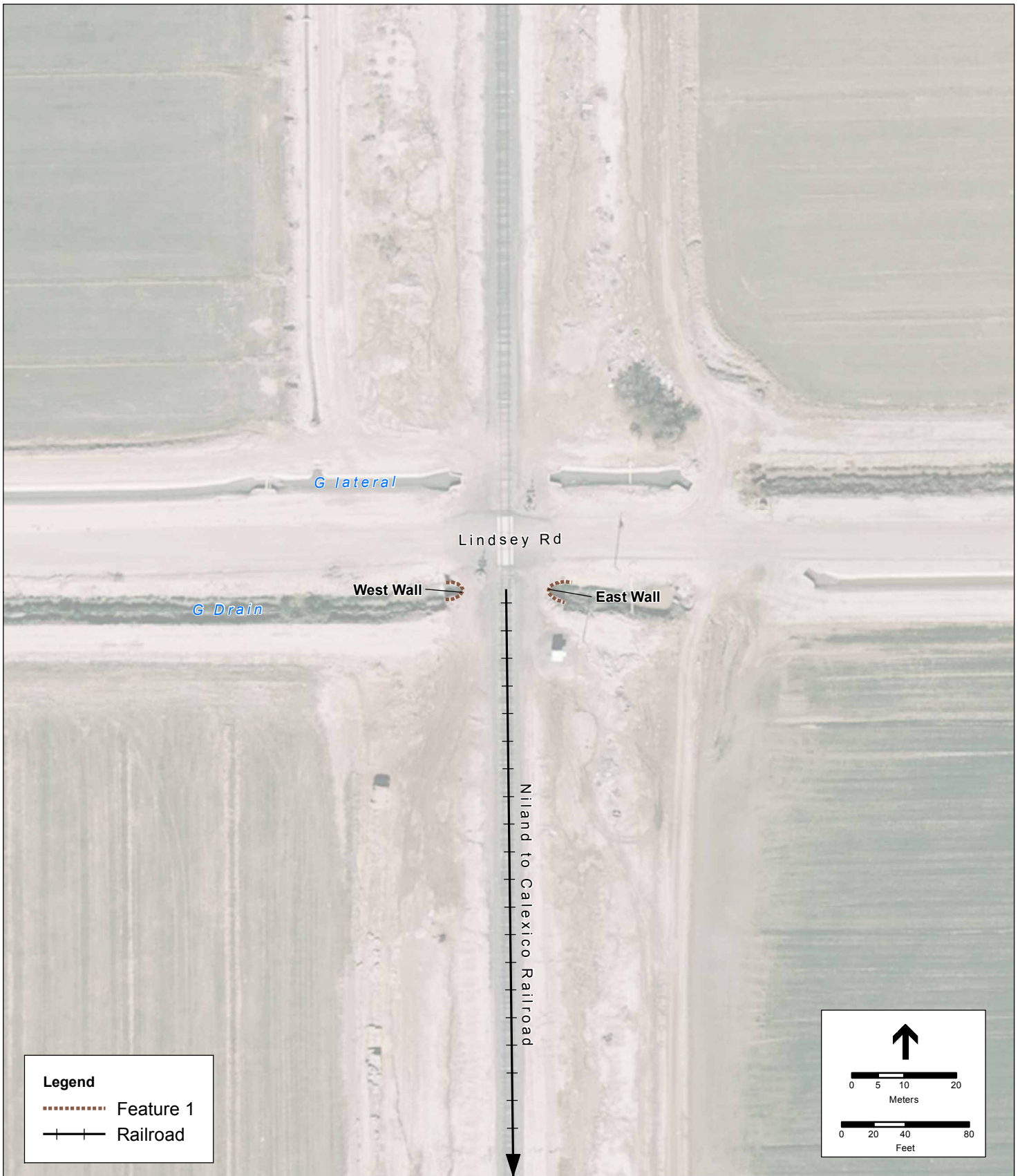
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SKETCH MAP

Trinomial: CA-IMP-8166H

* Resource Name or Number: CA-IMP-8166H



UPDATE

CONTINUATION SHEET

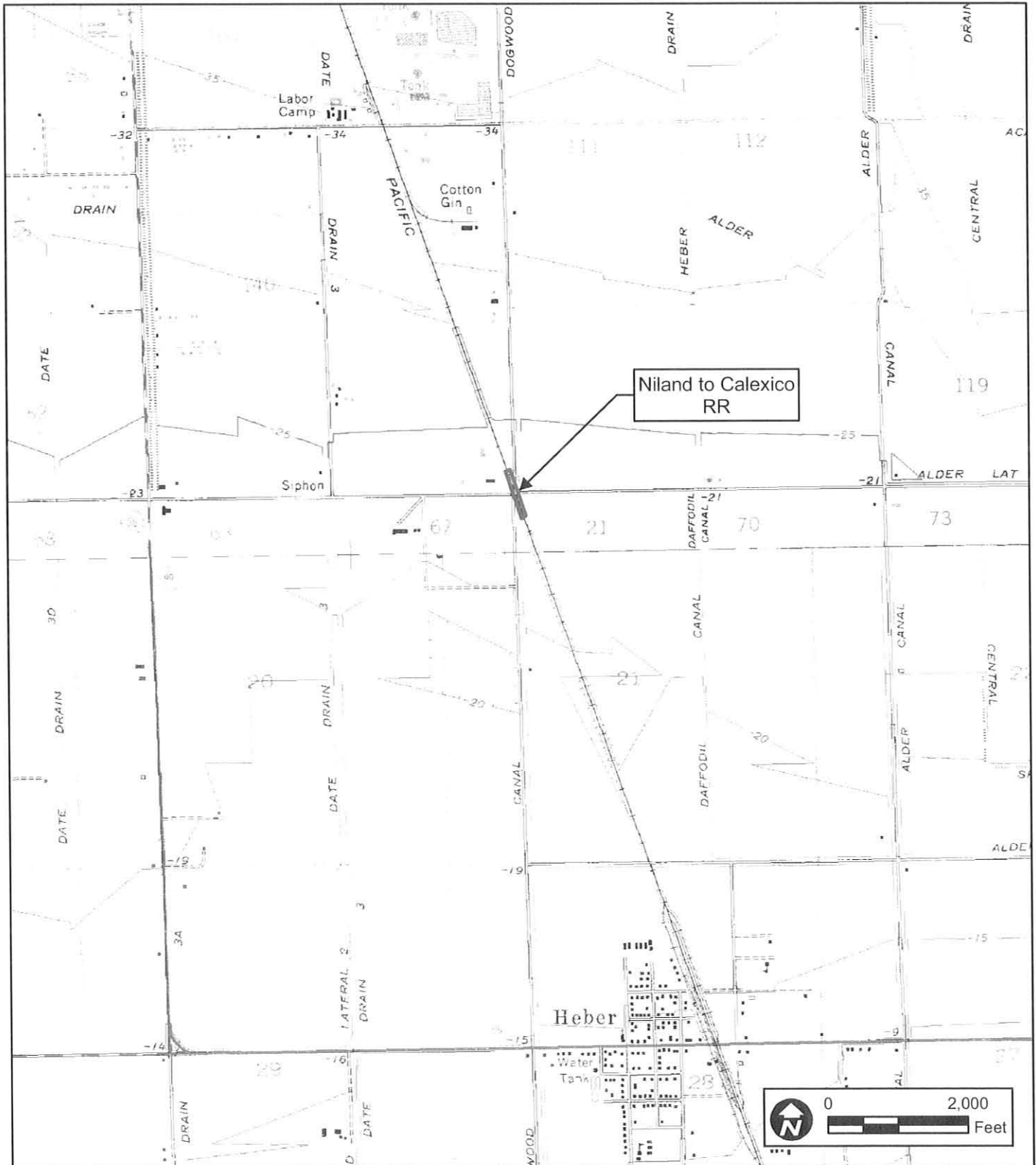
Trinomial CA-IMP-8166H

Page 1 of 3

*Resource Name or # (Assigned by recorder) Niland to Callexico RR

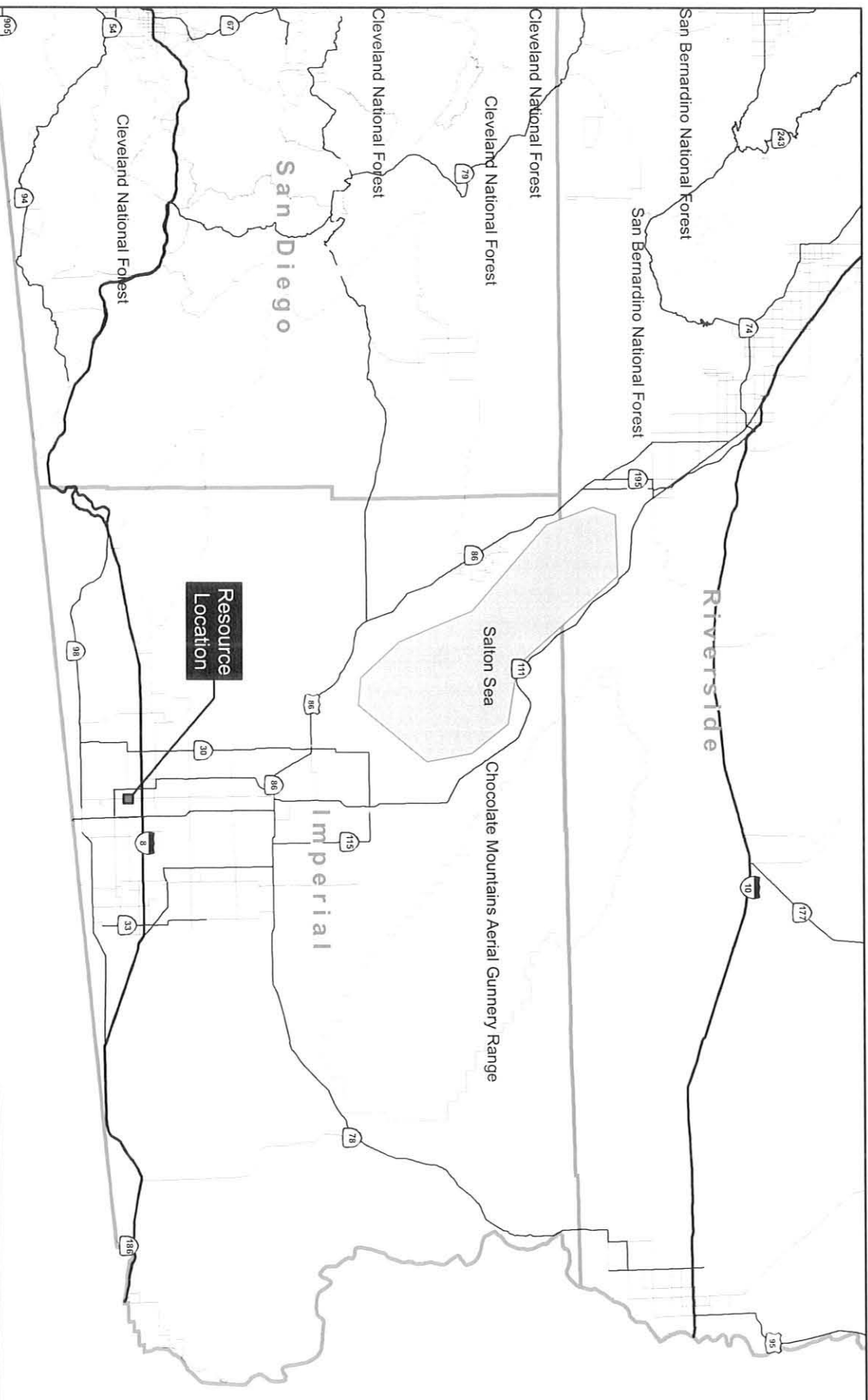
Recorded by Andrea C. Craft and Michael J. Wise Date 24 May 2005 ☐ Continuation ☒ Update

A small portion of the Niland to Callexico RR was field visited on 24 May 2005. A minor segment falls within the Area of Potentials Effects (APE) for the City and County of El Centro's project to widen Dogwood Road from one-half mile north of McCabe Road to the intersection with Correll Road. That portion crosses the APE for a length of 500 feet. The roadway project will not impact any of the railroad's features within the APE, which include at grade tracks, traffic control including gates, lights and bells, and a concrete base supported by metal pilings that suspends the track above the Dogwood Canal. Please see attached location and vicinity maps.



Primary #: P-13-008682
 Trinomial: CA-IMP-8166H

Resource Name or #: Niland to Calexico RR



State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary# P-13-008682
HRI#
Trinomial CA-IMP-8166
NRHP Status Code

Other Listings

Review Code

Reviewer

Date

Page 1 of 27 *Resource Name or #: (Assigned by Recorder) Niland to Calexico RR

P1. Other Identifier: Southern Pacific Railroad (Imperial and Gulf Branch)

*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Imperial

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Date T ; R 14E 1/4 of 1/4 of Sec ; SBM B.M.

c. Address City Zip

d. UTM: (Give more than one for large and/or linear resources) Zone 11; mE/ mN

e. Other Locational Data: (e.g., parcel #, direction to resources, elevation, etc., as appropriate)
see continuation sheet

P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting and boundaries)

Railroad line connecting the main Southern Pacific line with the cities of Imperial County and Mexico. A standard gauge track on a gravel base. The Southern Pacific Company was petitioned by the people of Imperial Valley to construct a branch line running through the Valley from the main line. When the Southern Pacific failed to get construction of the branch underway promptly, local citizens purchased right of way and materials with the intention of doing the job themselves. This brought immediate action from the Southern Pacific. By February 1903, the branch line had been completed from Old Beach (now Niland) southerly to Imperial. By January 1904 it had been extended on to Calexico. The line is still in use transporting goods from Mexico and Imperial county to the rest of the US. The track runs from approximately Sea Level in Calexico to -125 in Niland in a north south direction, covers a distance of ca 65-km

*P3b. Resource Attributes: (List attributes and codes) AH7 roads/trains/ railroad grades

*P4. Resources Present: ☐ Building ☐ Structure ☐ Object ☒ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5. Description of Photo: (View, date, accession #)
See attached

*P6. Date Constructed/Age and Sources: ☒ Historic

☐ Prehistoric ☐ Both

*P7. Owner and Address:

Union Pacific Rail Road

*P8 Recorded by: (Name, address and affiliation)

Karen Collins, J. Michael Pflaum
IVC Desert Museum

*P9 Date Recorded:

*P10. Survey Type: (Describe)
Pedestrian and vehicular

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") History of Imperial Irrigation District and the Development Of Imperial Valley by M. J. Dowd 1956 unpublished

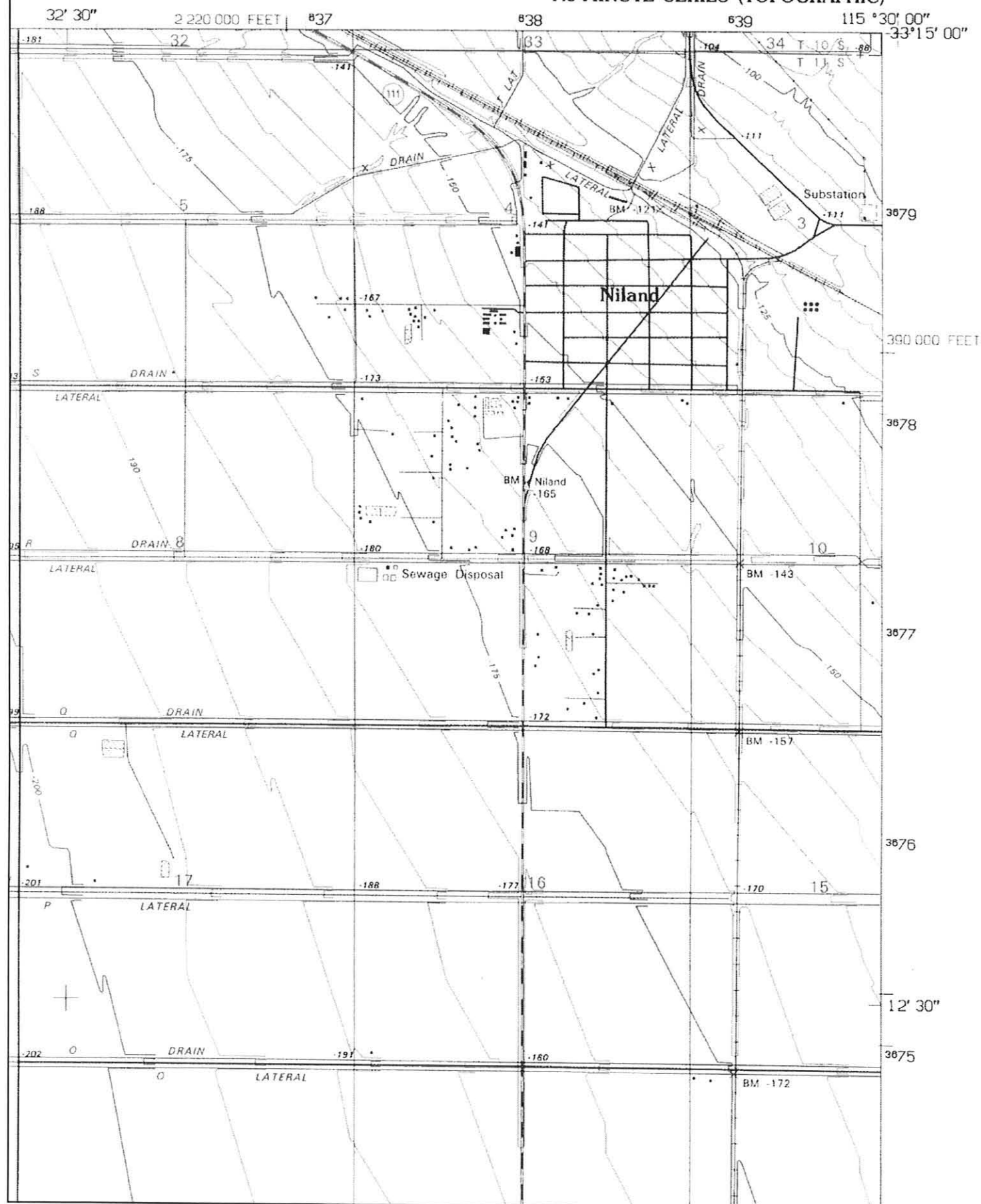
*Attachments: NONE ☒ Location Map ☐ Sketch Map ☒ Continuation Sheet ☐ Building, Structure and Object Record
☐ Archeological Record ☐ District Record ☒ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☒ Other (List) photo page

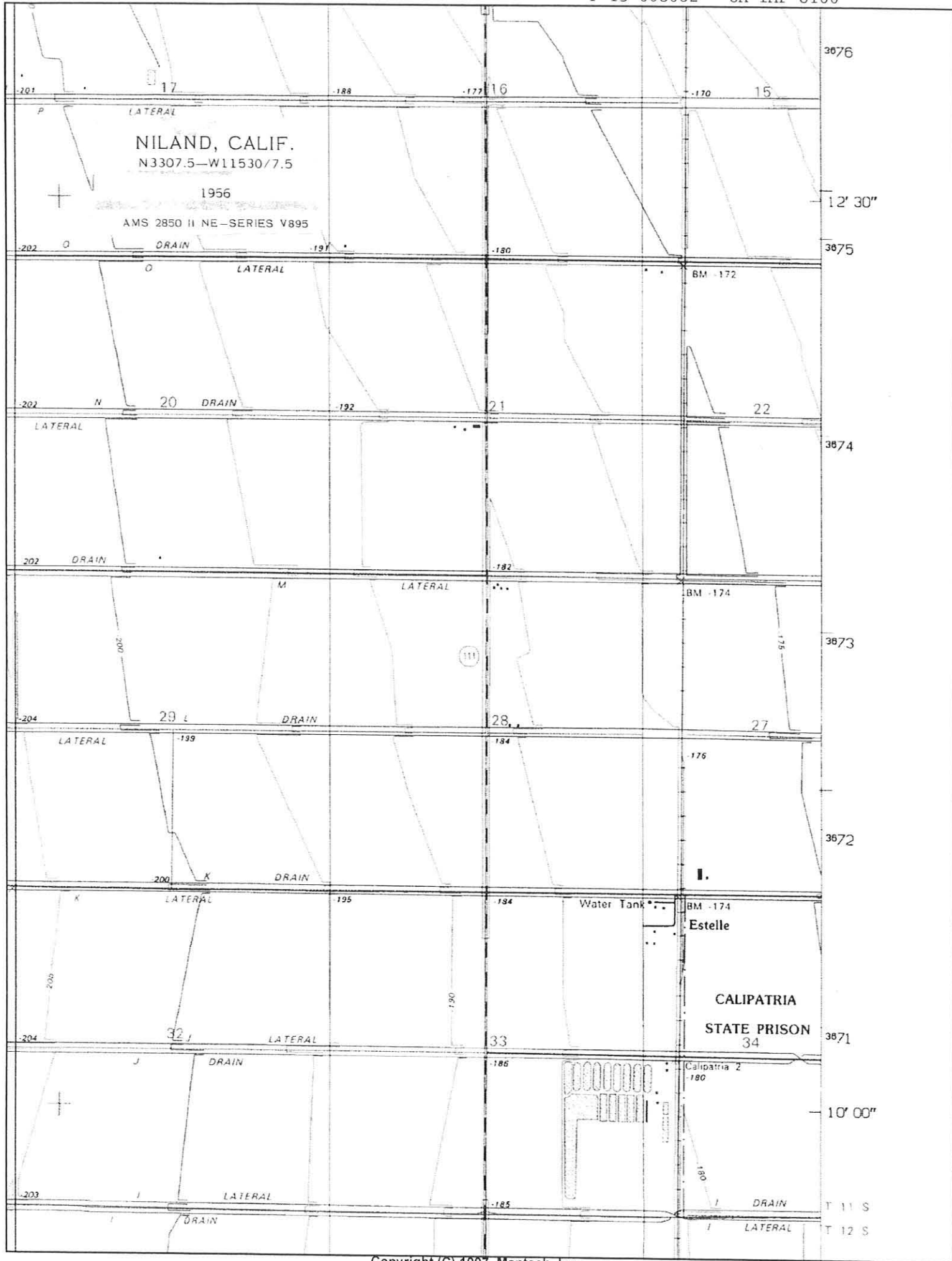
DPR 523A (1/95)

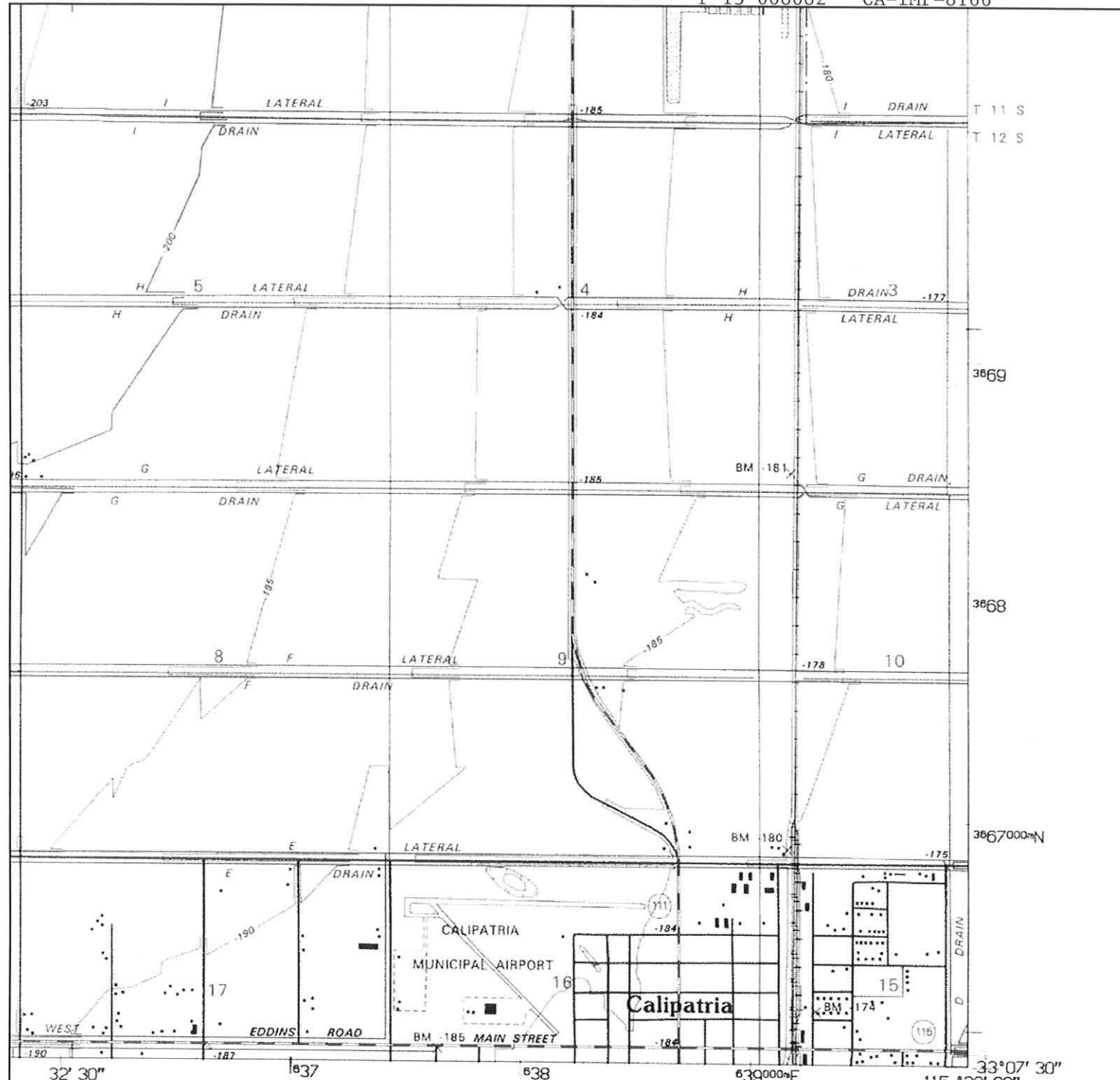
*Required Information

P-13-008682
CA-IMP-8166

NILAND QUADRANGLE
CALIFORNIA-IMPERIAL CO.
7.5-MINUTE SERIES (TOPOGRAPHIC)

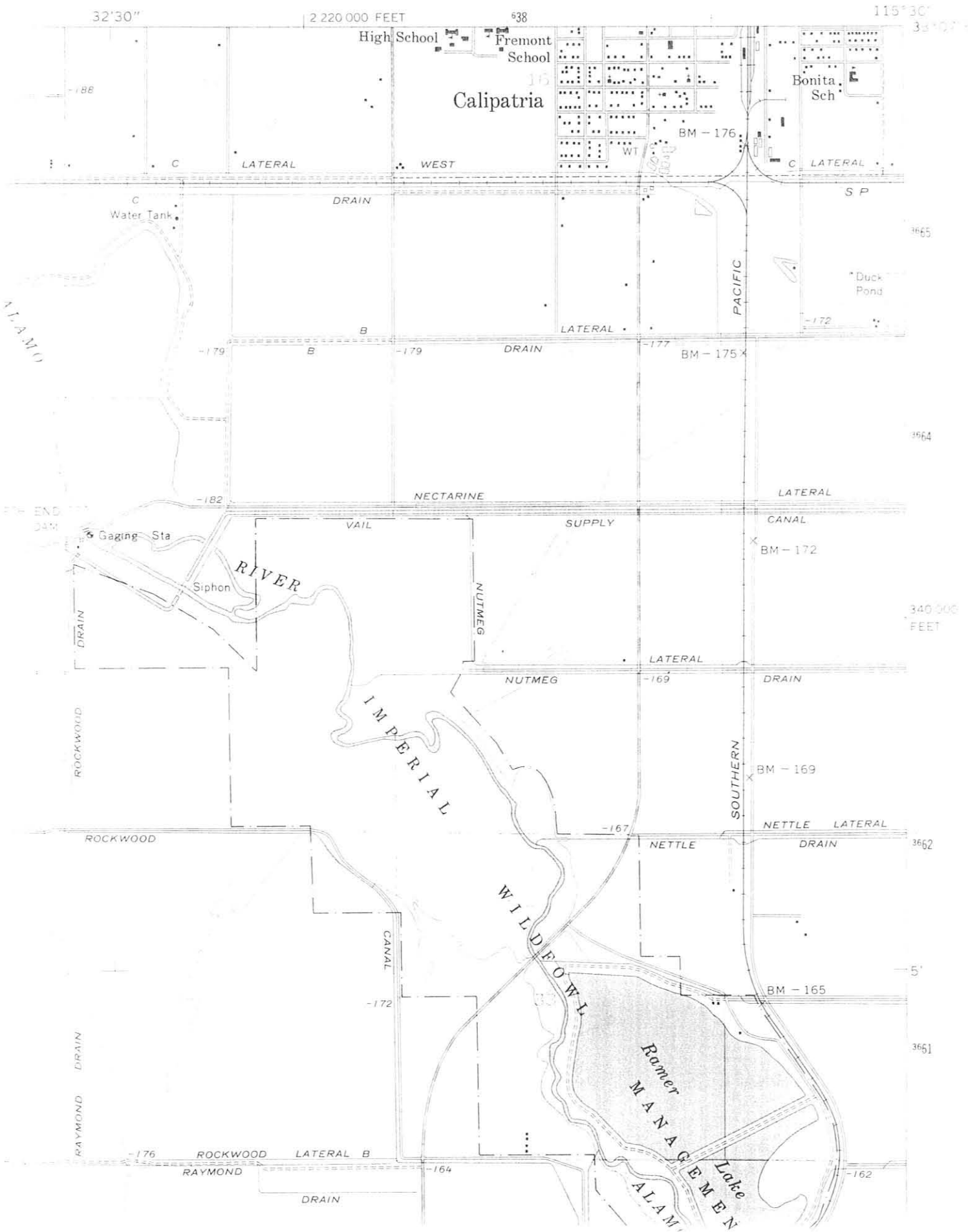






Copyright (C) 1997, Maptech, Inc.

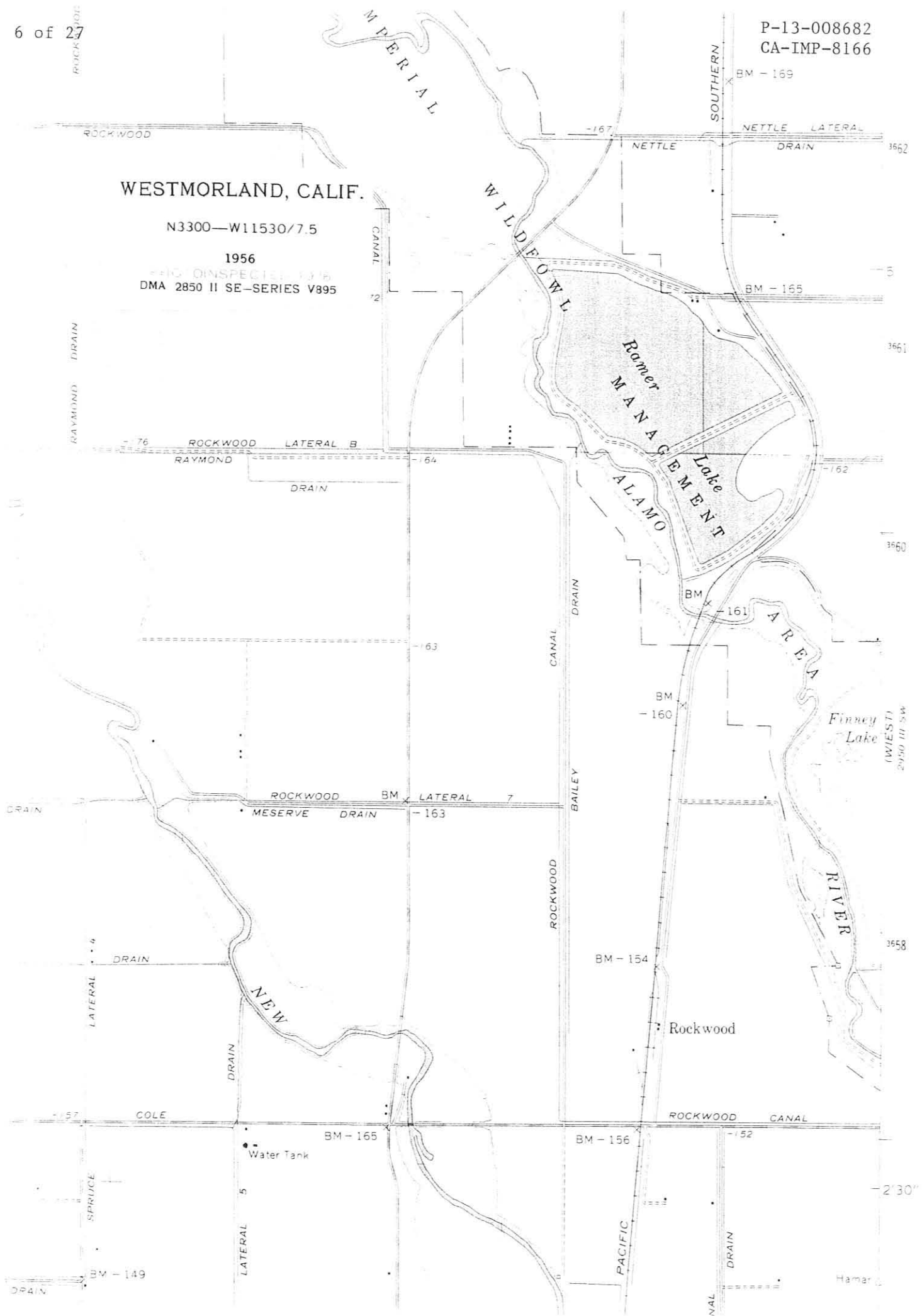
P-13-008682 CA-IMP-8166
WESTMORLAND QUADRANGLE
CALIFORNIA-IMPERIAL CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



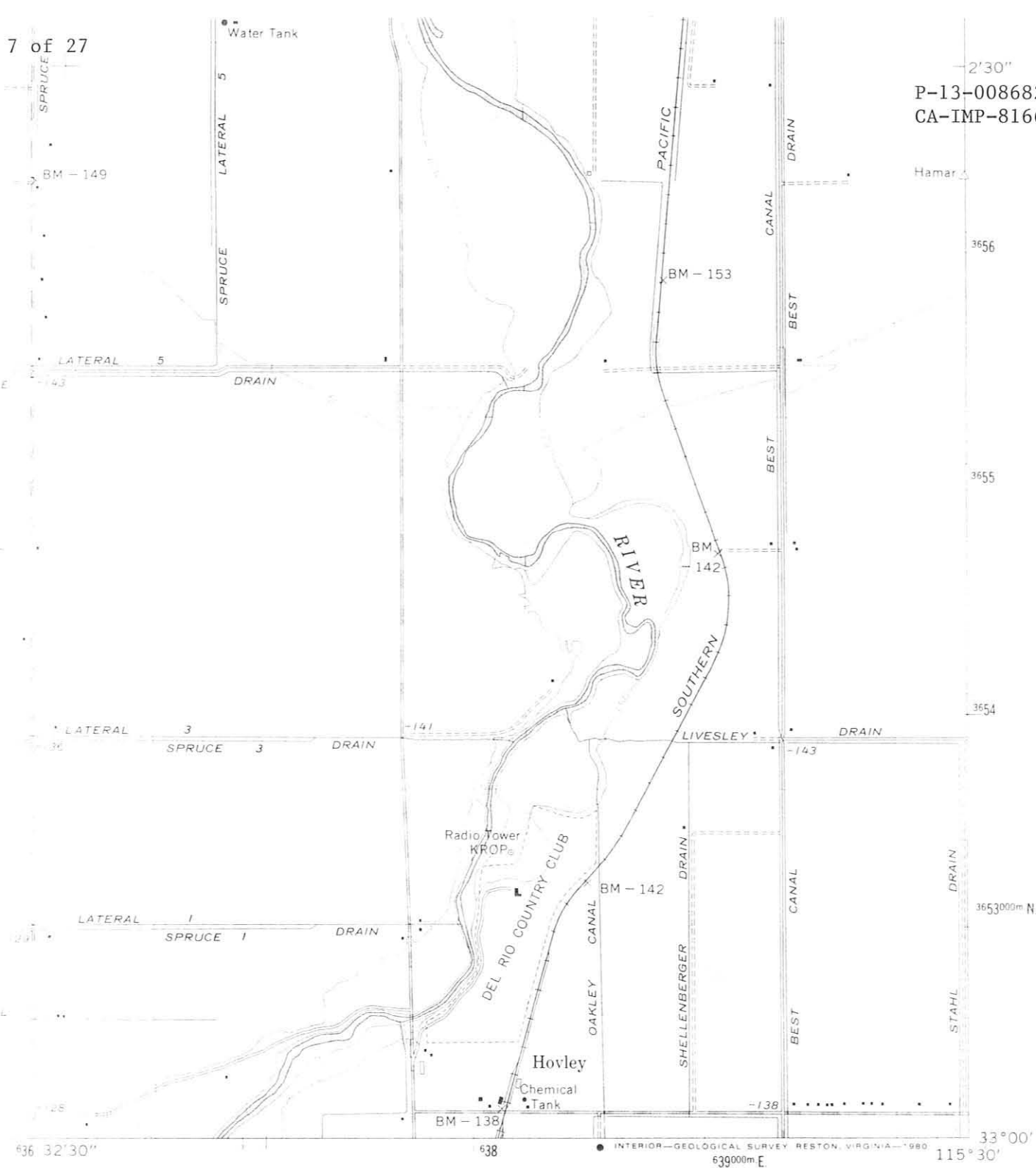
N3300—W11530/7.5

1956

DMA 2850 II SE-SERIES V895



—2'30"—
P-13-008682
CA-IMP-8166



ALAMORIO
2949 IV NW

ROAD CLASSIFICATION

Heavy-duty _____ Light-duty _____

Medium-duty _____ Unimproved dirt =====

U. S. Route

State Route



QUADRANGLE LOCATION

WESTMORLAND, CALIF.

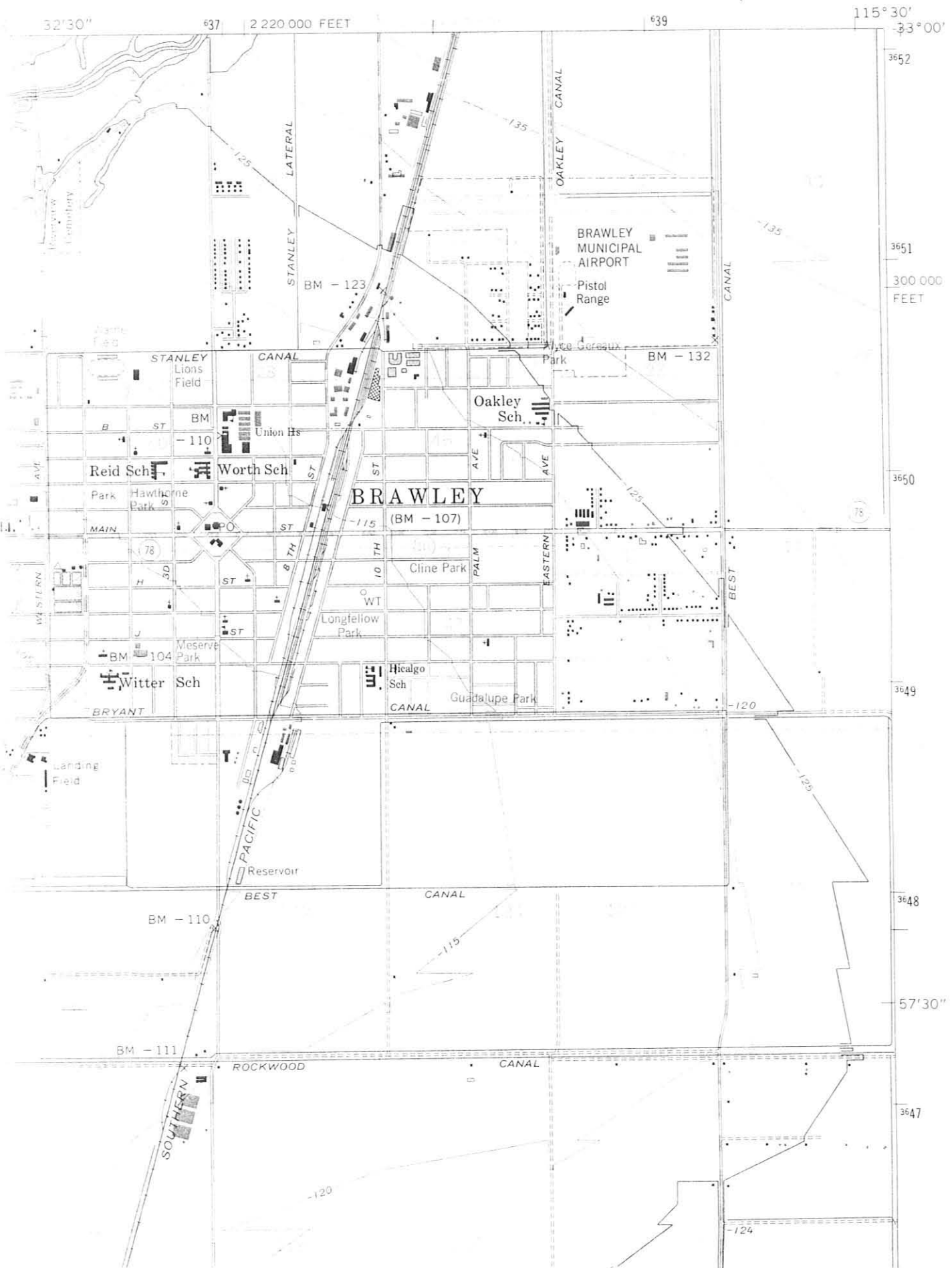
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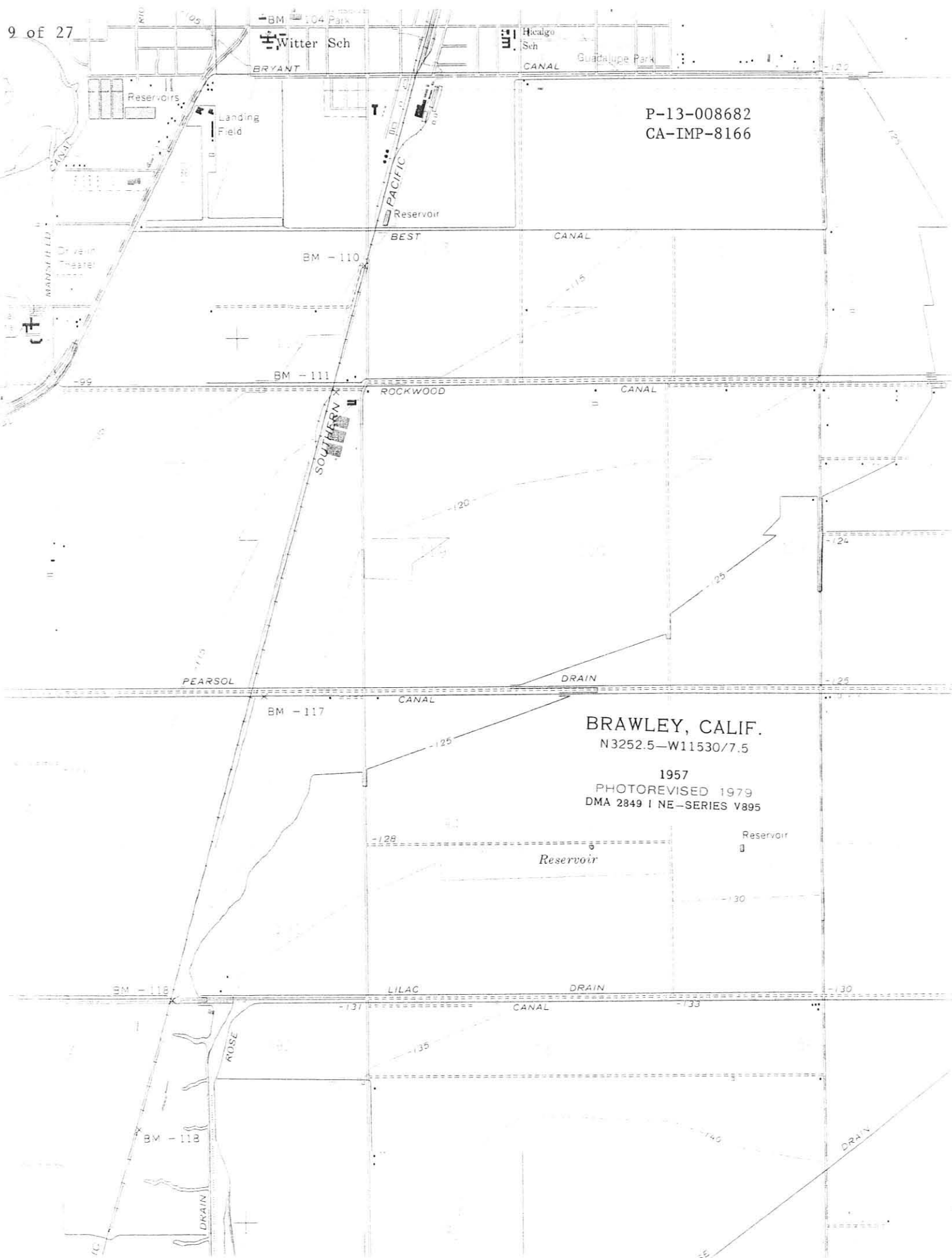
1956

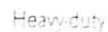
DMA 2850 II SE—SERIES V895

P-13-008682 CA-TMP-8166
BRAWLEY QUADRANGLE
CALIFORNIA-IMPERIAL CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

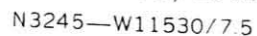
2950 III SW
(W1EST)



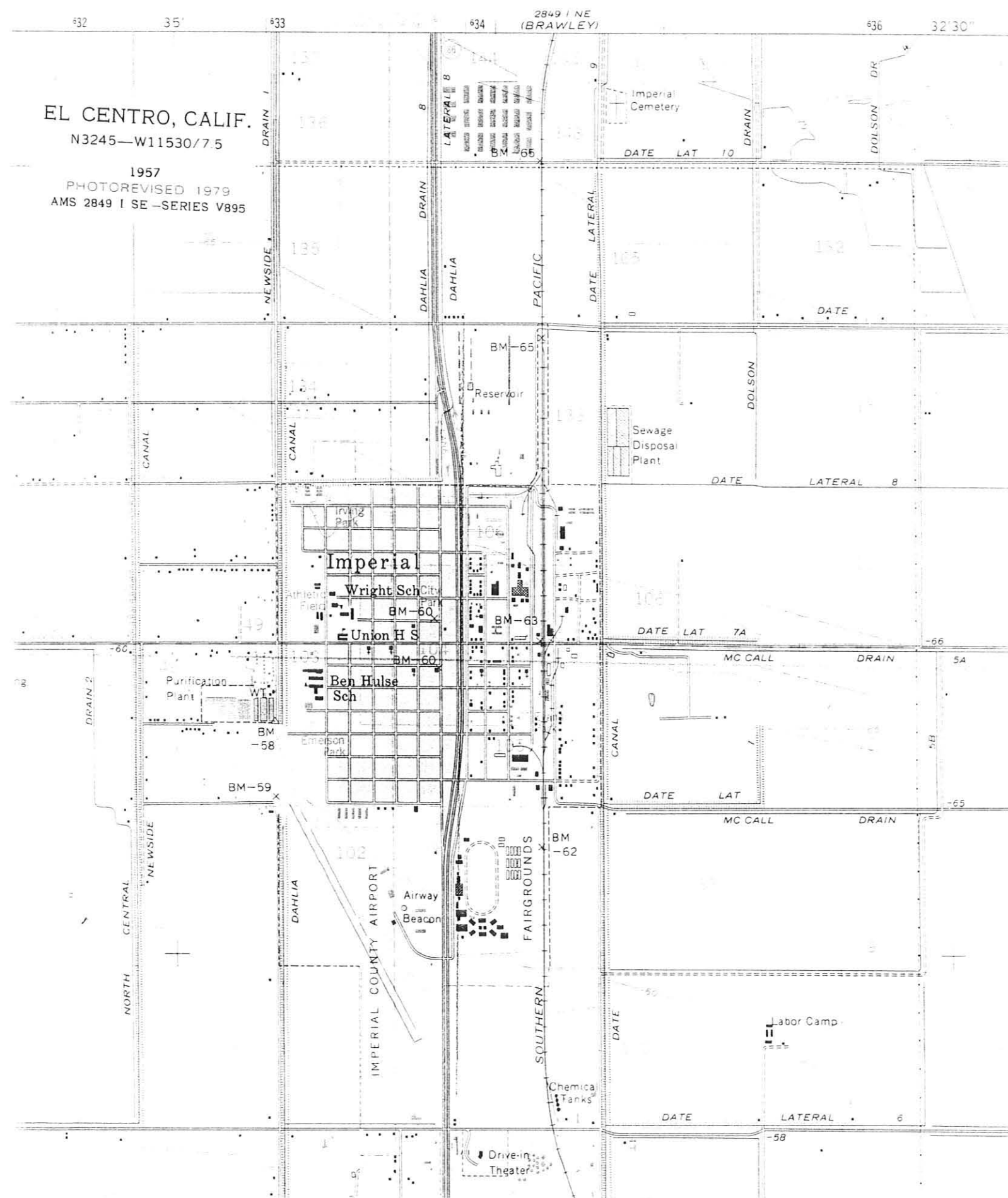




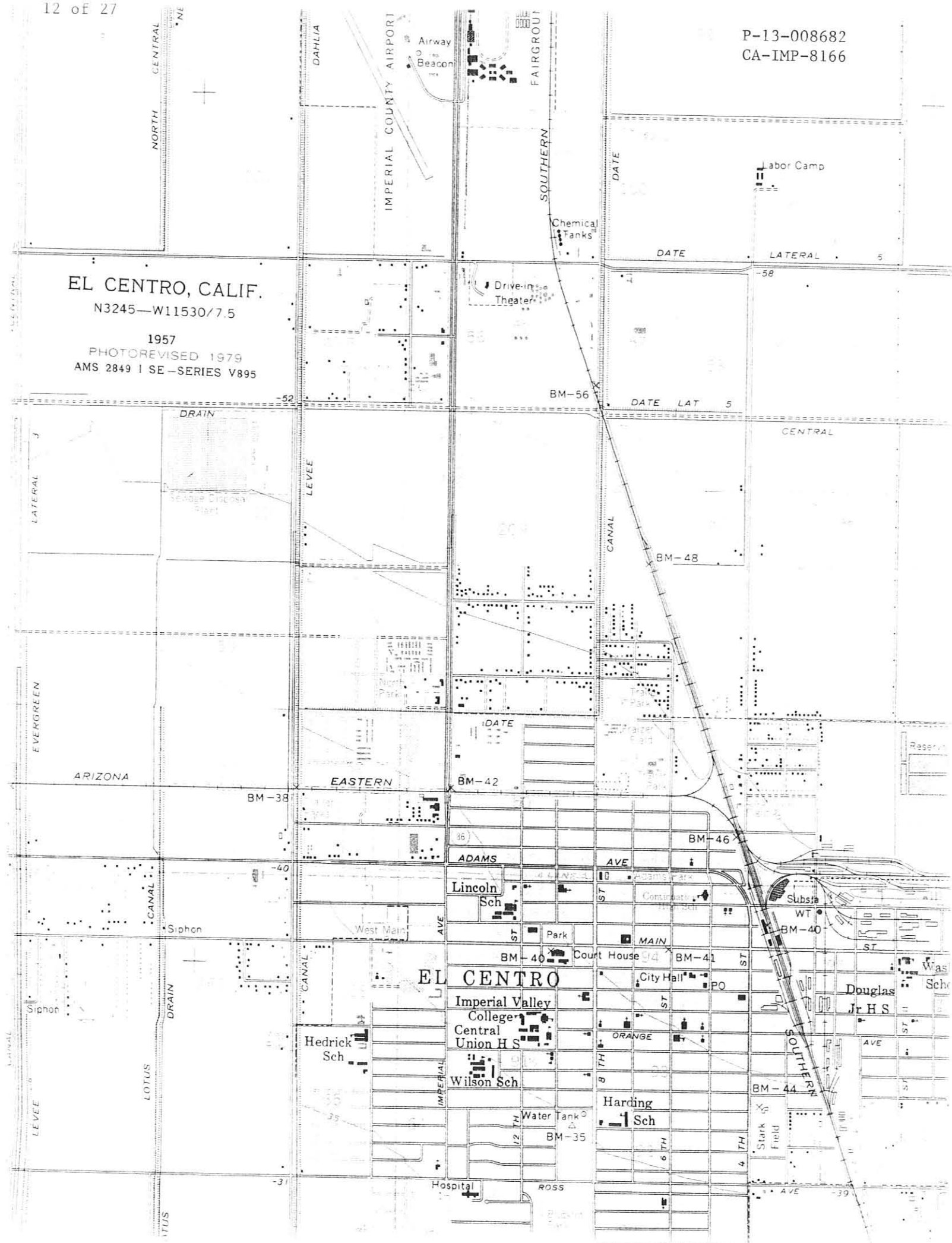
STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

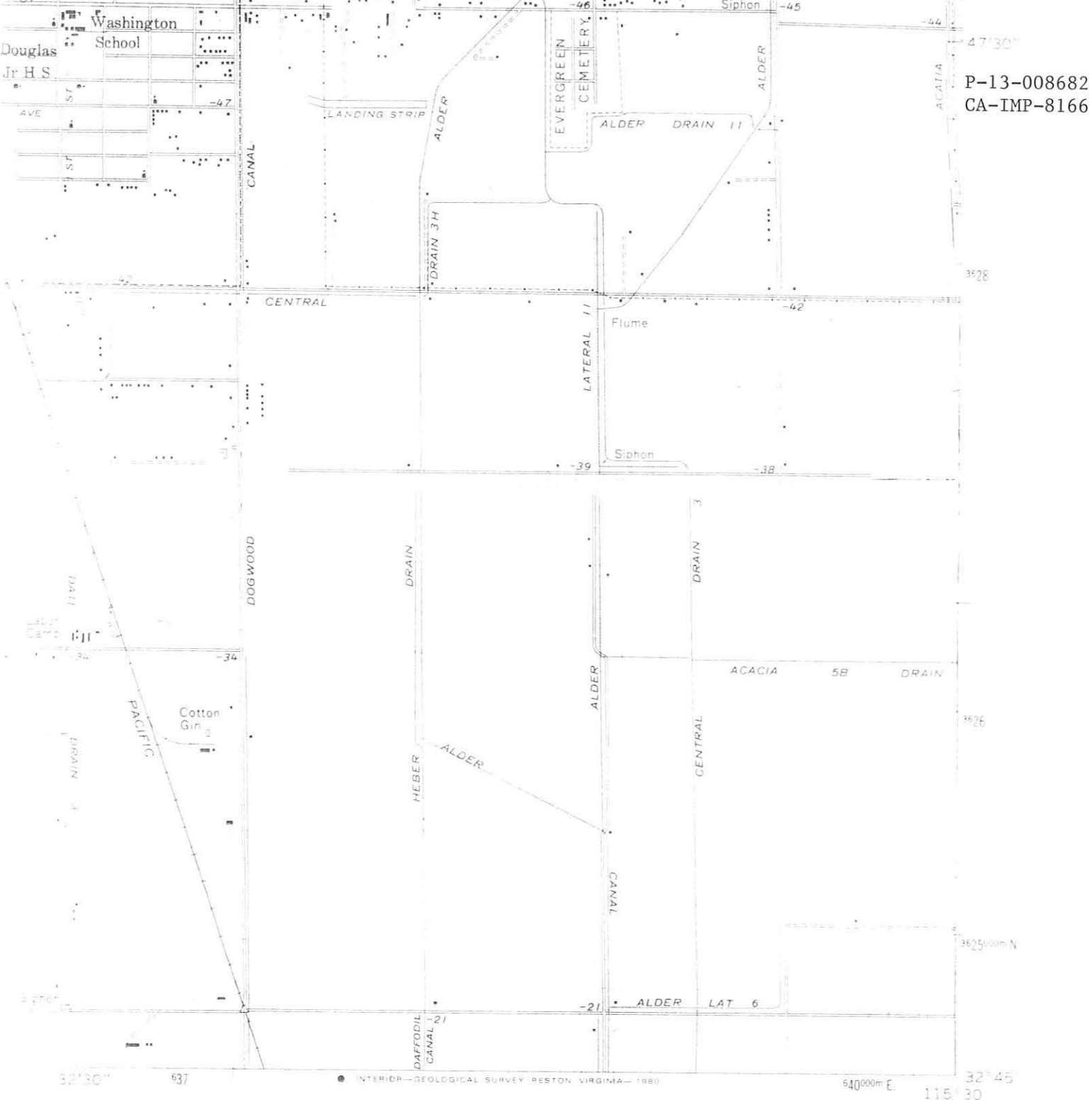


1957
PHOTOREVISED 1979
AMS 2849 I SE—SERIES V895



P-13-008682
CA-IMP-8166





P-13-008682
CA-IMP-8166

ROAD CLASSIFICATION

- | | | | |
|-------------|-------|-----------------|-------|
| Heavy-duty | ===== | Light-duty | ===== |
| Medium-duty | ===== | Unimproved dirt | ===== |
| U. S. Route | | State Route | |



QUADRANGLE LOCATION

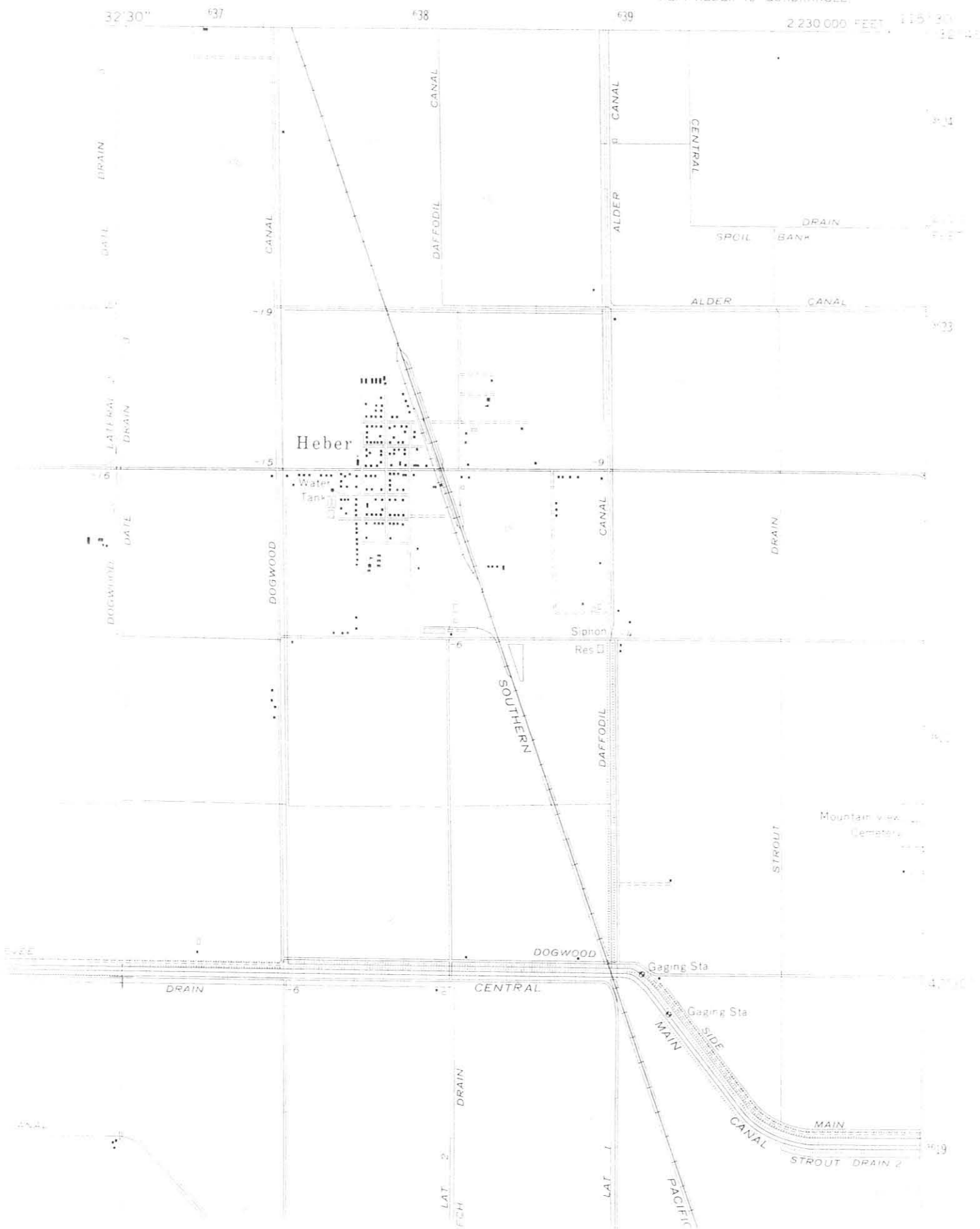
EL CENTRO, CALIF.
N3245—W11530/7 5

1957

HEBER QUADRANGLE
CALIFORNIA-IMPERIAL CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

NE 1/4 HEBER 15' QUADRANGLE

FROM ALPHABETIC



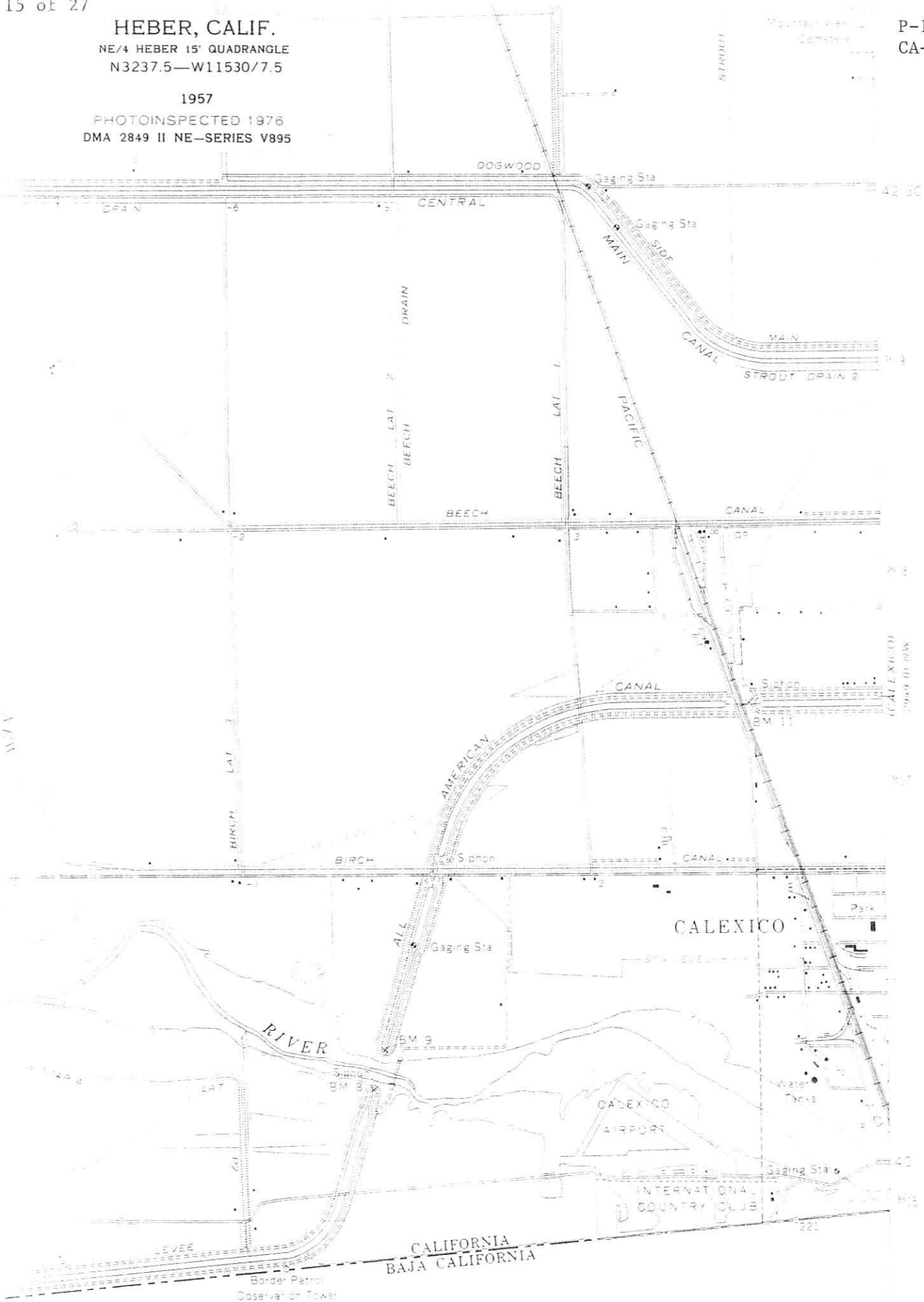
HEBER, CALIF.

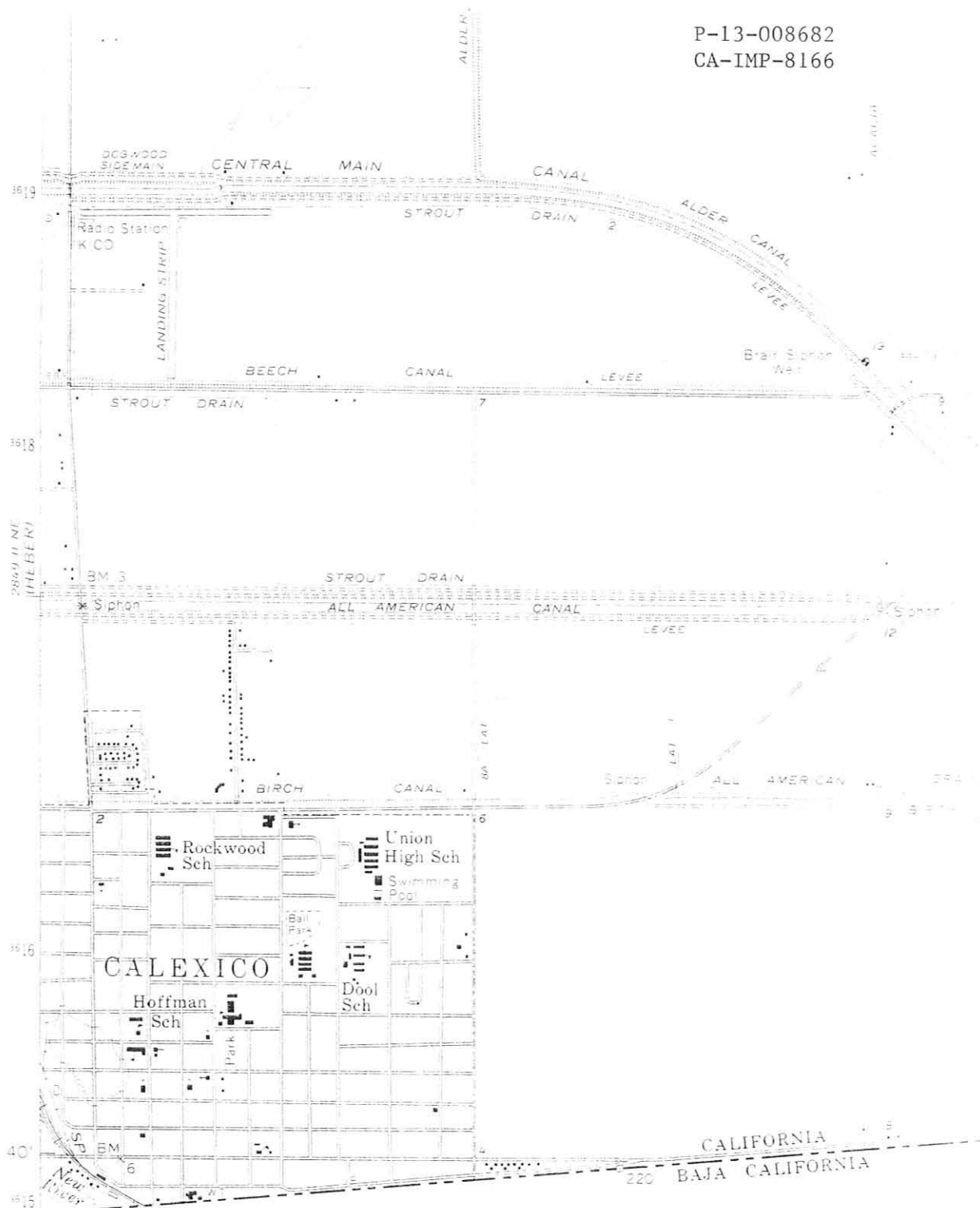
NE/4 HEBER 15' QUADRANGLE
N3237.5—W11530/7.5

1957

PHOTOINSPECTED 1976
DMA 2849 II NE—SERIES V895

P-13-008682
CA-IMP-8166





CALEXICO, CALIF.

NW/4 CALEXICO 15' QUADRANGLE
N3237.5—W11522.5/7.5

1957

AMS 2949 III NW—SERIES V895

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
ARCHEOLOGICAL SITE RECORD

Primary# P-13-008682
Trinomial# CA-IMP-8166

Page 17 of 27 *Resource Name or # (Assigned by recorder) Niland to Calexico RR

*A1. Dimensions: a. Length 65m (NS) x b. Width 15-100m (EW)
Method of Measurement: ☐ Paced ☐ Taped ☒ Visual estimate ☐ Other: _____
Method of Determination (Check any that apply): ☐ Artifacts ☒ Features ☐ Soil ☐ Vegetation ☐ Topography
☐ Cut Bank ☐ Animal burrow ☐ Excavation ☒ Property Boundary ☐ Other Explain): _____

Reliability of Determination: ☒ High ☐ Medium ☐ Low Explain: _____

Limitations (Check any that apply): ☐ Restricted Access ☐ Paved/built over ☐ Site Limits incompletely defined
☐ Disturbances ☐ Vegetation ☐ Other (Explain): _____

A2. Depth: ☒ None ☐ Unknown Method of Determination: _____
*A3. Human Remains: ☐ Present ☒ Absent ☐ Possible ☐ Unknown (Explain): _____

*A4. Features (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):
Major sidings and structures shown on location maps.

*A5. Cultural Constituents (Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.):

*A6. Were Specimens Collected? ☒ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)

*A7. Site Condition: ☒ Good ☐ Fair ☐ Poor (Describe disturbances.):

*A8. Nearest Water (Type, distance, and direction.): Crosses the Alamo River

*A9. Elevation: Sea level to -125

A10. Environmental Setting (Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.): Most of the line is in agricultural land. Native vegetation is found along the Alamo river. Native plants include arrowweed, mesquite, creosote, bursage and paloverde. Soils are lake deposits from Lake Cahuilla.

A11. Historical Information: Transportation was a very serious problem in Imperial Valley in the early 1900's. All materials and supplies had to be freighted overland from the Southern Pacific railroad at Flowing Wells. There was a similar problem in the shipment of products grown in the Valley. The Southern Pacific Company was petitioned by the people of Imperial Valley to construct a branch

*A12. Age: ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☒ 1880-1914 ☒ 1914-1945
☐ Post 1945 ☐ Undetermined Describe position in regional prehistoric chronology or factual historic dates if known:
Line was constructed 1903-1904. While originally a passenger and freight line it is used only for freight today.

A13. Interpretations (Discuss data potential, function(s), ethnic affiliation, and other interpretations):

A14. Remarks:

A15. References (Documents, informants, maps, and other references): History of Imperial Irrigation District and the Development of Imperial Valley by M. J. Dowd, Reconnaissance map of the Salton Sink, CA 1908 reprinted 1931

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.):

Original Media/Negatives Kept at:

*A17. Form Prepared by: Karen M. Collins

Date: June 13, 2003

Affiliation and Address:

DPR523C (1/95)

*Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LINEAR FEATURE RECORD

Primary# P-13-008682

HRI#

Trinomial# CA-IMP-8166

Page 18 of 27

*Resource Name or # (Assigned by recorder) Niland to Calexico RR

L1. Historic and/or Common Name: Southern Pacific Railroad (Imperial and Gulf Branch)

L2a. Portion Described: ☒ Entire Resource ☐ Segment ☐ Point Observation ☐

Designation:

b. Location of point or segment: (Provide UTM coordinates, legal description, and any other useful locational data. Show the area that has been field inspected on a Location Map)

L3. Description: (Describe construction details, materials and artifacts found at this segment/point. Provide plans/sections as appropriate.)

A standard gauge track on a gravel base. The Southern Pacific Company was petitioned by the people of Imperial Valley to construct a branch line running through the Valley from the main line. When the Southern Pacific failed to get construction of the branch underway promptly, local citizens purchased right of way and materials with the intention of doing the job themselves. This brought immediate action from the Southern Pacific. By February 1903, the branch line had been completed from Old Beach (now Niland) southerly to Imperial. By January 1904 it had been extended on to Calexico. (see continuation)

L4. Dimensions: (In feet for historic features and meters for prehistoric features.)

- a. Top Width
- b. Bottom Width
- c. Height or Depth
- d. Length of Segment 65 km

L4e. Sketch of Cross-Section (include scale)

Facing:

L5. Associated Resources:

P-13-007699 CA-IMP-7594H Railroad
buildings in Calexico

L6. Setting: (Describe natural features, landscape characteristics, slope, etc., as appropriate.)

The tracks rise approximately 125 feet in elevation from Niland to Calexico over a 65-km distance. Most of the line crosses agricultural fields. When originally constructed some lands were still natural desert lake bottom.

L7. Integrity Considerations:

Aside from routine maintenance the line is in the same location as when constructed in 1903-04.

L8a. Photograph, Map or Drawing

SEE PHOTO PAGE

L8b. Description of Photo, Map, or Drawing (View, scale, etc.)

See photo page

L9. Remarks:

L10. Form Prepared by: (Name, affiliation, and address)

Karen M. Collins
IVC Desert Museum

L11. Date: June 11, 2003

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary# P-13-008682
HRI#
Trinomial# CA-IMP-8166

Page 19 of 27 *Resource Name or # (Assigned by recorder) Niland to Calexico RR

P2b. Niland 1956
Westmorland 1956
Brawley 1957
El Centro 1957
Heber 1957 photo revised 1976
Calexico 1957

The track passes through these sections

T 11S, R 14E Sec 34, 27, 22, 15, 10, 3
T 12S, R 14E Sec 34, 27, 22, 15, 10, 3
T 13S, R 14E Sec 33, 28, 21, 22, 15, 10, 3
T 14S, R 14E Sec 31, 30, 29, 20, 17, 8, 5, 4
T 15S, R 14E Sec 32, 31, 30, 19, 18, 7, 6
T 16S, R 14E Sec 33, 28, 21, 16, 17, 8, 5
T 17S, R 14E Sec 14, 11, 3, 2

P2d. North UTM 639120 East 3678620 North NAD 27
South UTM 641075 East 3614965 North NAD 27

A11. line running through the Valley from the main line. When the Southern Pacific failed to get construction of the branch underway promptly, local citizens purchased right of way and materials with the intention of doing the job themselves. This brought immediate action from the Southern Pacific. By February 1903, the branch line had been completed from Old Beach (now Niland) southerly to Imperial. By January 1904 it had been extended on to Calexico. The line is still in use transporting goods from Mexico and Imperial county to the rest of the US.

The Southern Pacific planned to extend the line from Calexico in a loop through Lower California, Mexico and back into the United States near Hanlon Heading, connecting with the main line a few miles west of Yuma, Arizona. The proposed line had been completed from Calexico-Mexicali to Cocupah, some fifteen miles when the 1905 break occurred. This portion of the Southern Pacific line in Lower California was completed in 1909 and is known as the Inter-California Railroad.

L3. City of Calexico - major siding, station, UC customs, crosses US/Mexico border, crosses All American Canal approximately 1/2 mile northwest of city
Town of Heber - major siding
City of El Centro - major siding, connection with AZ & San Diego RR, connection with line from Holtville, train station with three associated buildings and platform (P-13-008322)
City of Imperial - major siding and platforms
City of Brawley - major sidings, crosses Alamo River at T13s, R 14E sec 3
Town of Calipatria - sidings and platforms
Town of Niland - sidings and platforms, meets main line of Southern Pacific to New Orleans, Los Angeles and Sacramento

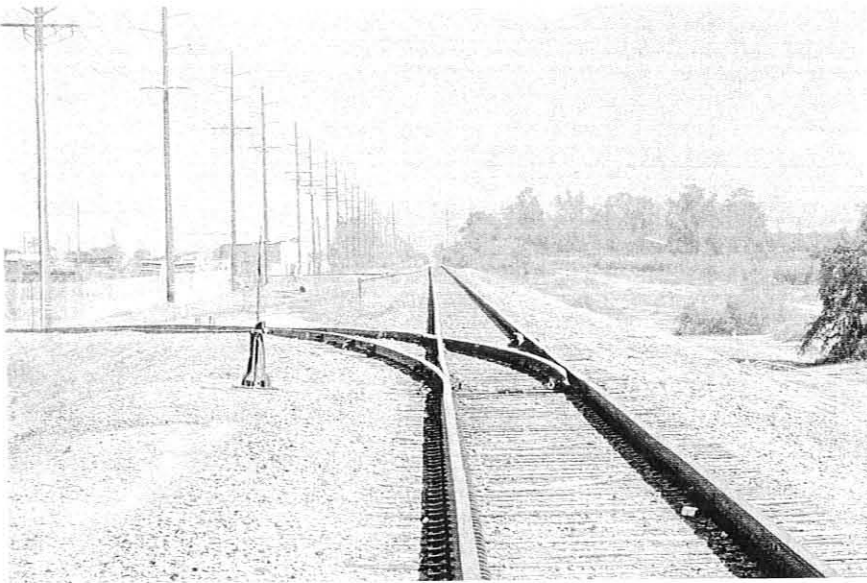
This line is now used only for commercial traffic. Passenger service is no longer offered.

*Recorded by Karen M. Collins

*Date June 13, 2003

☒ Continuation ☐ Update

Southern Pacific rail line facing
north
Standing east side of track at
Horn Road
El Centro June 13,2003
Olympus digital camera



Southern Pacific rail line facing
south
Standing east side of track at
Horn Road
El Centro June 13,2003
Olympus digital camera

Southern Pacific rail line facing
north
Standing east side of track at
Main Street
El Centro June 13,2003
Olympus digital camera



P-13-008682
CA-IMP-8166

CALIFORNIA

IMPERIAL COUNTY
CALIPATRIA QUADRANGLEDEPARTMENT
ENGINEERS, U. S. ARMY

15 MINUTE SERIES

INDIO 55 MI.
MECCA 41.2 MI.

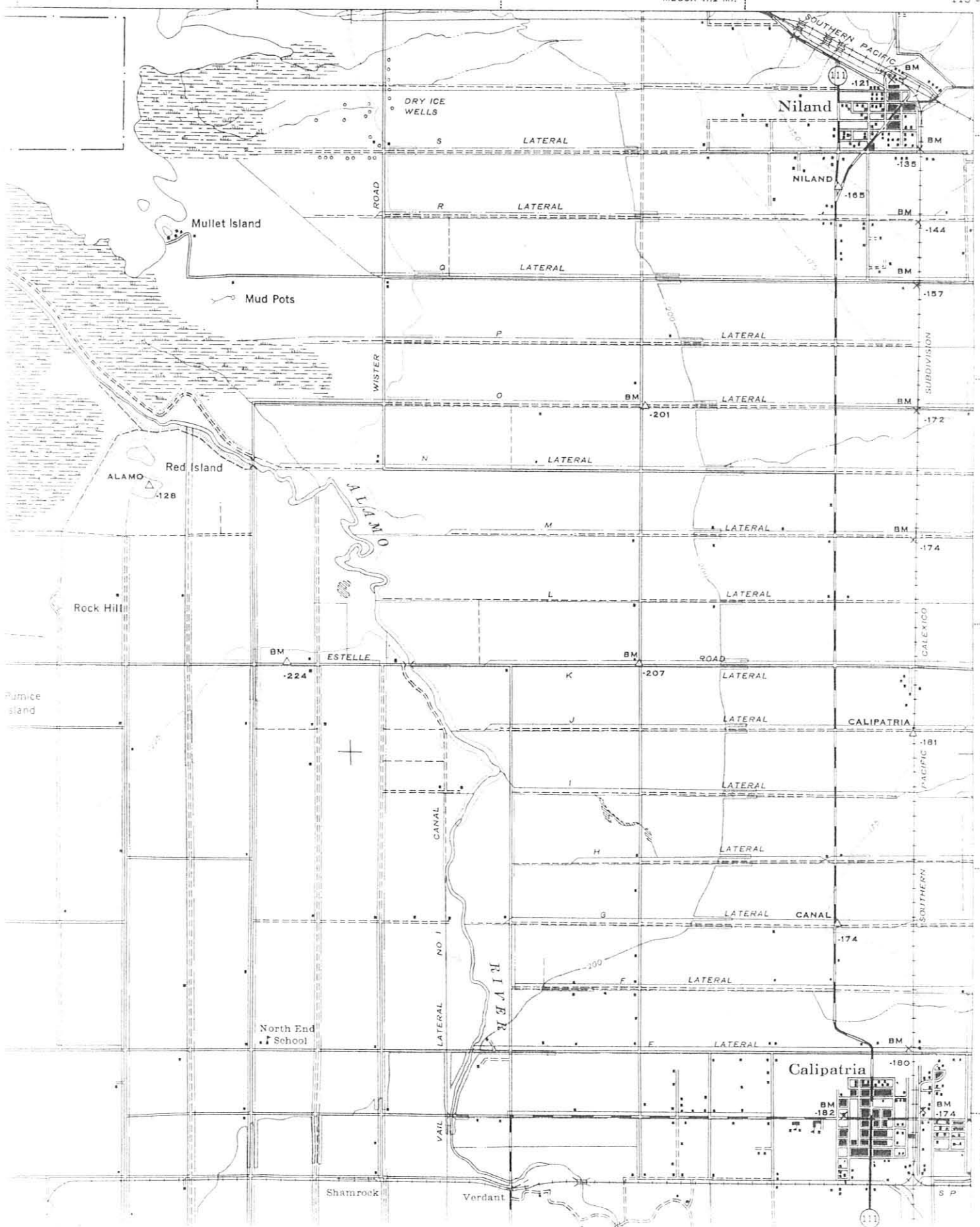
115°30'

33°15'

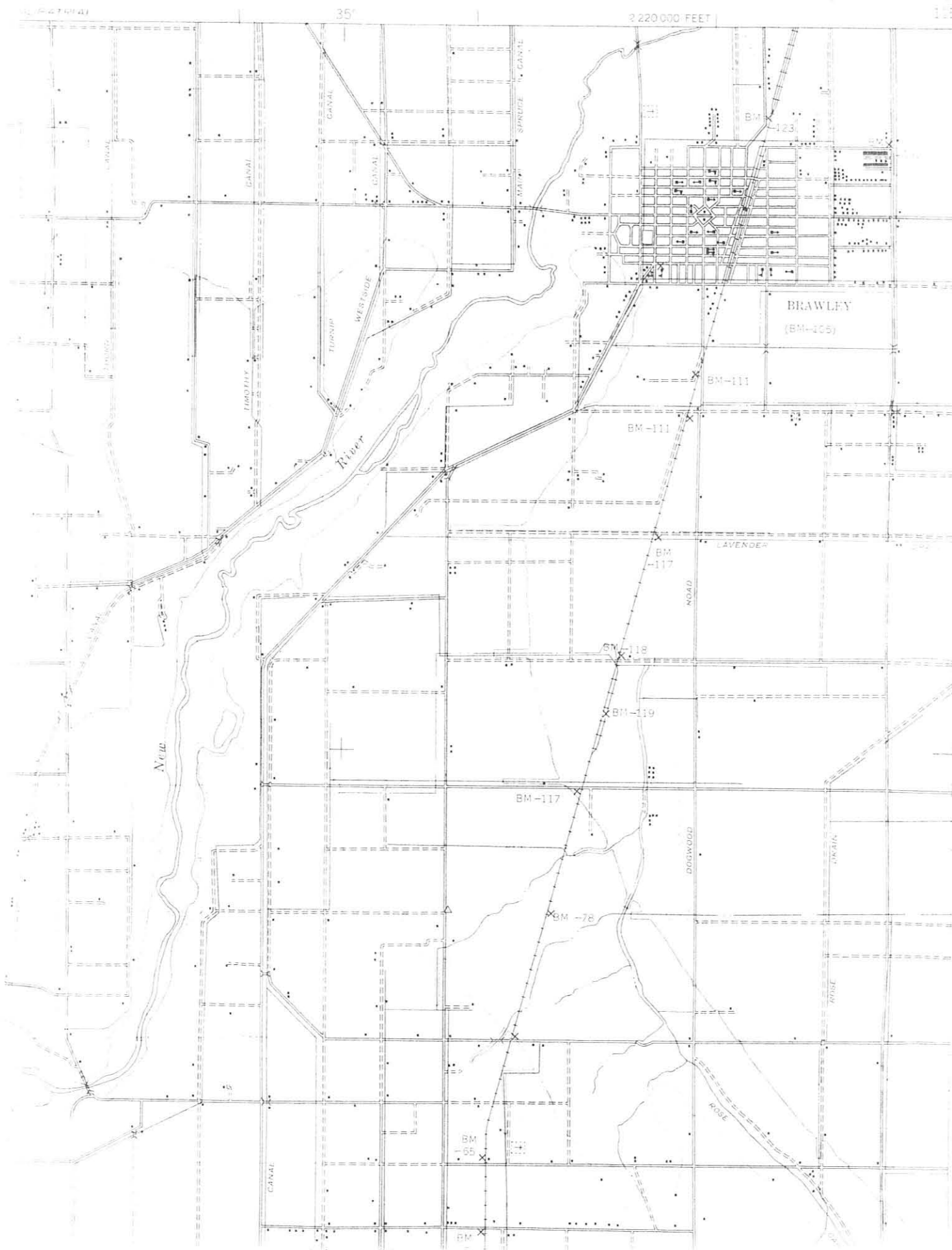
(Iris Pass)

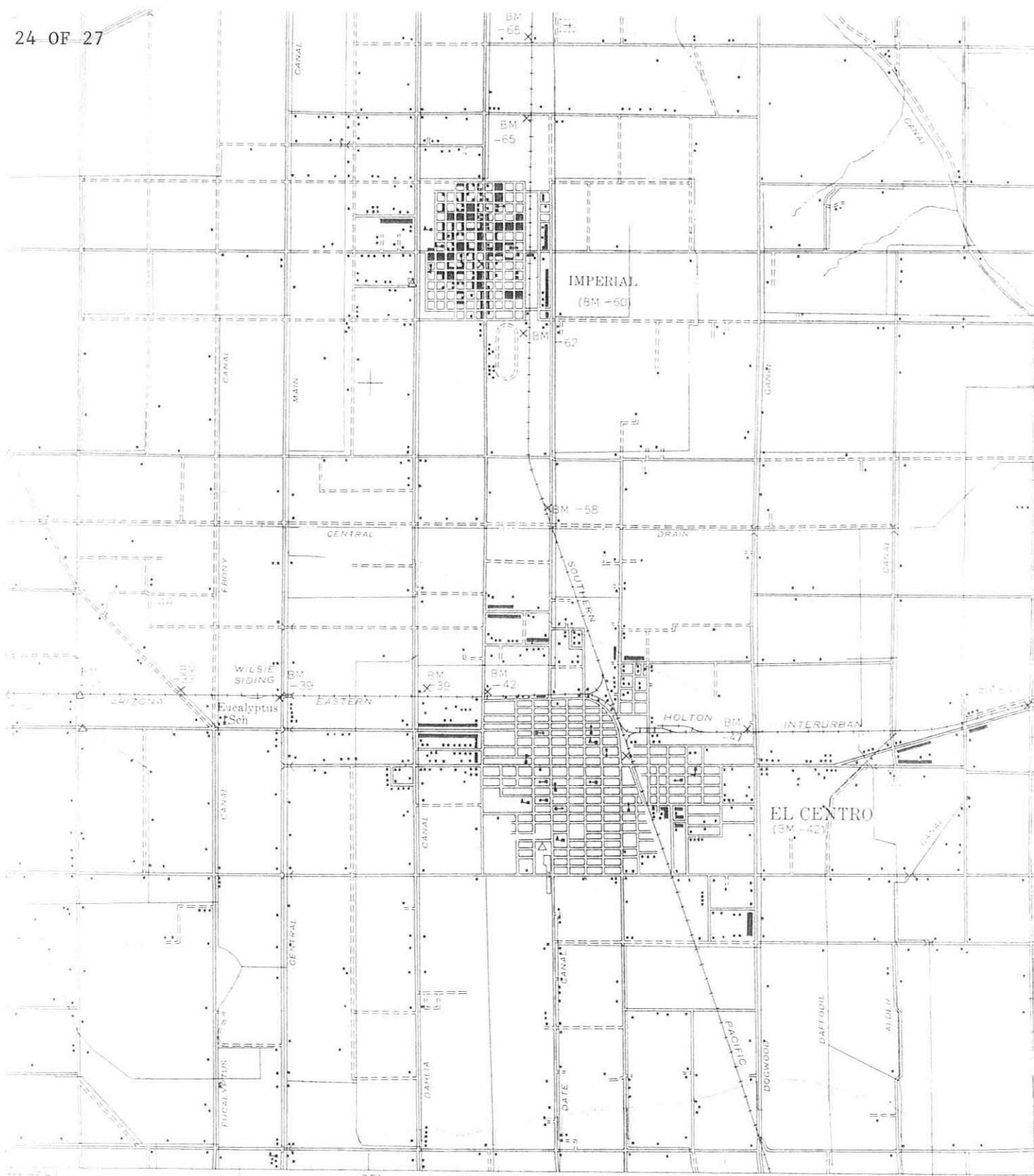
(Frink)

35'



(Iris)





QUADRANGLE LOCATION

ROAD CLASSIFICATION 1943

Heavy-duty	Light-duty
Medium-duty	Unimproved
U.S. Route	State Route

P-13-008682
CA-IMP-8166

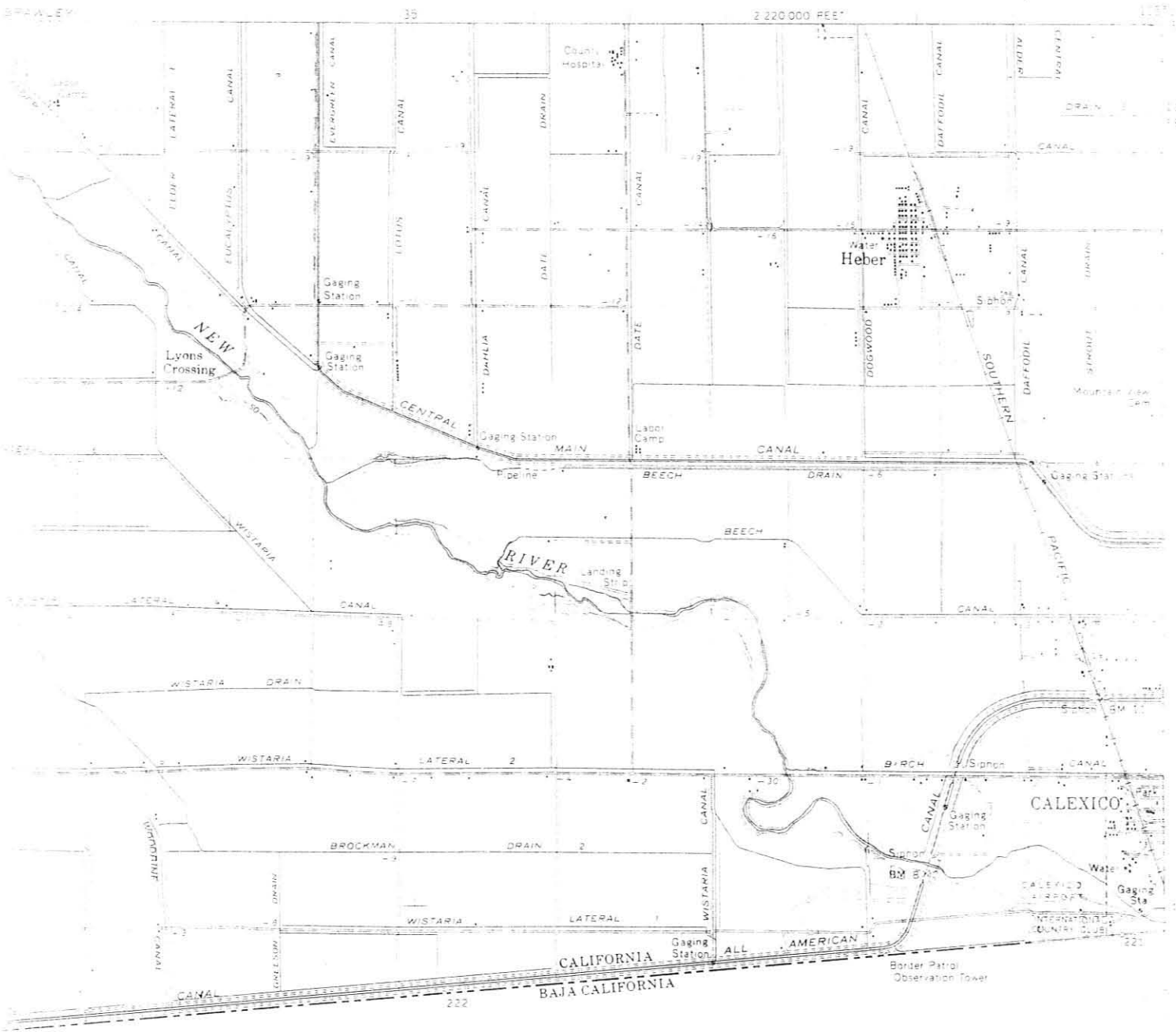
BRAWLEY, CALIF.
N3245-W11530/15

AL CENTER, DENVER, COLORADO OR WASHINGTON 25, D. C.
MAPS AND SYMBOLS IS AVAILABLE ON REQUEST



DEPARTMENT OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

HEBER QUADRANGLE
CALIFORNIA-IMPERIAL CO.
15 MINUTE SERIES (TOPOGRAPHIC)



ROAD CLASSIFICATION

Heavy duty	—————	Light duty	—————
Medium duty	—————	Unimproved dirt	—————
U.S. Route		State Route	

This area also covered by 1:24,000-scale maps of
Heber and Mount Signal 7.5 minute quadrangles
surveyed 1957

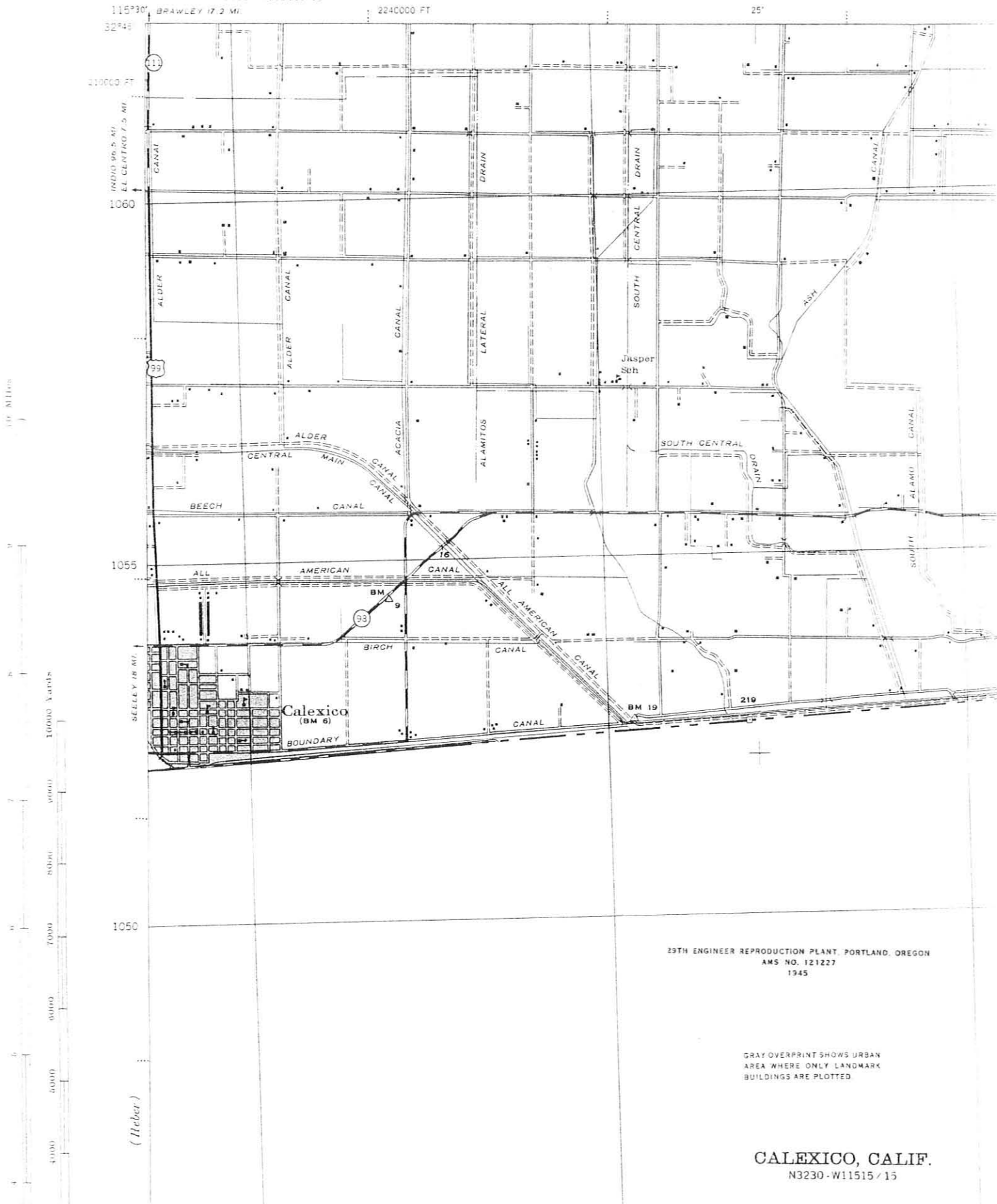
HEBER, CALIF.
N3230 - W11530/15

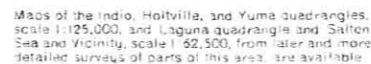
1957

IMPERIAL COUNTY

CALIFORNIA
IMPERIAL COUNTY
CALEXICO QUADRANGLE
GRID ZONE "F"
N3230-W11515/15

WA
CORPS OF





CONTINUATION SHEET

Property Name: Central Main Canal

Page 1 of 3

The Central Main Canal is a major distribution canal that channels water throughout Imperial County. The linear feature branches from the All-American Canal, located northeast of Calexico. The canal runs roughly northwest for approximately 27 miles (43.5 kilometers) and drains into the New River. An approximately 3-mile (4.8 kilometer) long segment of the canal was recorded in PaleoWest's 2023 study (Clark and Severen 2023). The Central Main Canal in this area ranges from approximately 80 to 100 feet in width and is contained within sloped earthen backs that are flanked by a mixture of dirt and paved access roads. Dense, low vegetation lines the areas of the banks nearest to the flowing water.

The exact date of the canal construction is not known; however, historical maps indicate that the canal was in operation by the early 1900s (USGS 1907). An elevation of significance identified that the Central Main Canal is eligible under CRHR Criterion 1 due to its association with historical events that have significantly contributed to the broad patterns of California's history (Clark and Severen 2023).

In October 2023, Chronicle Heritage revisited the Central Main Canal located west of Dogwood in the southern extent of Township 16 South, Range 14 East, Section 32 for the Heber 1 Solar Project (Clark and Torres 2024). This survey revisited portions of the canal that intersect Dogwood Road and Pfizer (Ware) Road with no noted changes in the canal observed since PaleoWest's 2023 recordation.

In May 2025, Catalyst Environmental Solutions conducted a survey for the proposed ORMAT Heber 1 Parasitic Solar Project. The three interconnection alignments intersect the Central Main Canal in three separate sections of this resource. Optional Routes 1 and 2 intersect the Central Main Canal east of Dogwood Road at the intersection of Ware Road and Willoughby Road. Optional Route 3 intersects the Central Main Canal where Dogwood Road intersects with Willoughby Road.

The Central Main Canal at each intersecting location is approximately 100 feet in width and is characterized by sloped earthen banks flanked on each side by unimproved roads. Catalyst observed no changes in the condition of the resources since Chronicle Heritage documented the resource in October 2023 and reported in 2024 (Clark and Torres 2024; Tipton 2025).

Reference: Tipton, Katherine (2025) Cultural Resource Report for the ORMAT Heber 1 Parasitic Solar Project, Imperial County, California. Report prepared by Catalyst Environmental Solutions, Santa Monica, California.

Clark, Tiffany, and Scott Torres (2024) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

Clark, Tiffany, and Gena Severen (2023) Cultural Resources Assessment for the Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Facilities, Imperial County, California. Report prepared by Catalyst Environmental Solutions by PaleoWest, Monrovia, California.

CONTINUATION SHEET

Property Name: Central Main Canal

Page 2 of 3



Overview of the Central Main Canal. View to the west-northwest



Overview of Optional Route 1 crossing Central Main Canal. View to the west.

CONTINUATION SHEET

Property Name: Central Main Canal

Page 3 of 3



Overview from Route 2 crossing at Central Main Canal. View to the north.



Overview of Route 3 crossing at Central Main Canal. View to the northwest.

*Recorded by: K. Tennesen and J. Whitaker

*Date: Nov. 2010

☐ Continuation

☒ Update

As a part of the Calexico Border Patrol Station Offsite Improvements Project, HDR, Inc. surveyed a small, unrecorded segment of the previously recorded Central Main Canal on November 18, 2010. A different, small portion of the canal was originally recorded by HDR | e2M in April 2010 as a part of an unrelated cultural resources project.

This update addresses a separate portion of the Central Main Canal than was originally recorded (Rosenberg 2010). The section visited as a part of the current survey is approximately 0.3 miles (0.5 kilometers) southeast of the previously recorded canal segment, and is specific to where the canal crosses State Highway 98 on the USGS Calexico quadrangle (see attached location map). Due to the restricted scope of the current project the entire length of the Central Main Canal was not investigated. Therefore this update addresses only the small canal section examined as a result of the current, finite project boundary. This portion of the canal is consistent in form, size, and condition with the related previously recorded segment of the Central Main Canal (Rosenberg 2010).

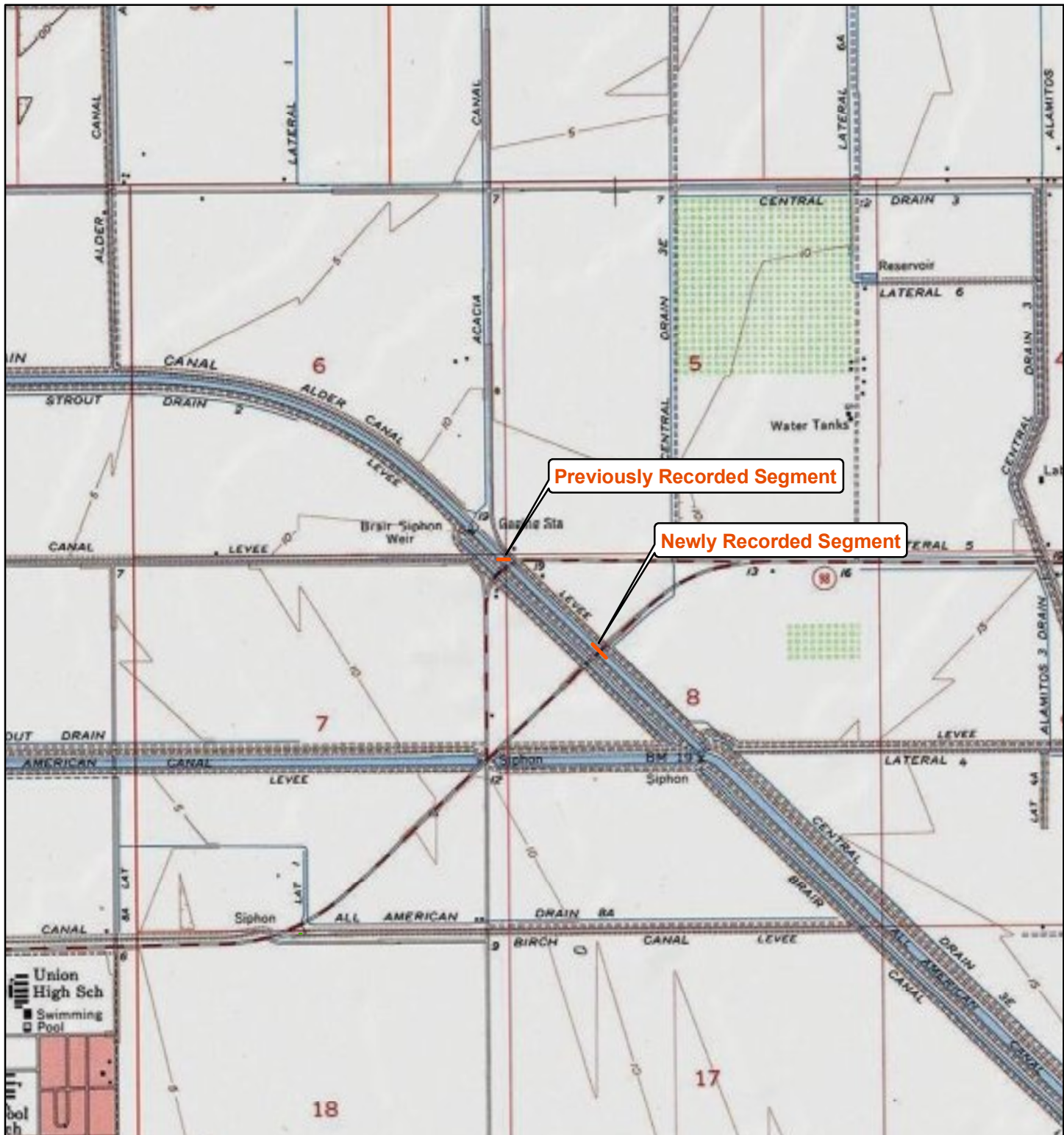
Report Citations:

Rosenberg, Seth A. 2010 *Cultural Resources Survey Report, Cole Boulevard Eastside Widening Project, Calexico, California*.

Tennesen, Kristin and Sara Clowery 2010 *Cultural Resources Survey Report, Calexico Border Patrol Station Offsite Improvements Project, Calexico, California*.



Overview of the Central Main Canal, facing Northwest. November 18, 2010.



PRIMARY RECORD

Primary #
HRI #

P-13-012243

Trinomial
NRHP Status Code 7

Other Listings
Review Code

Reviewer

Date

Page 1 of 4

*Resource Name or #: Central Main Canal

P1. Other Identifier:

*P2. Location: ☐ Not for Publication ☒ Unrestricted

*a. County: Imperial

and (P2b and P2c or P2d. Attach a Location Map as necessary.) *b. USGS 7.5' Quad: Calexico Date: 1957 T 17S; R 15E;

corner junction of Sections 5, 6, 7, and 8, continuing east along the boundary of Sections 5 and 8 S.B. B.M.

c. Address:

City: Calexico

Zip:

d. UTM: Zone: 11N; 643954 mE/ 3618403 mN (G.P.S.) NAD83

e. Other Locational Data: The portion of the Central Main Canal surveyed is in east Calexico, California approximately one half-mile north of the SR 98/Bowker Road intersection. The canal is adjacent to the Briar Canal at the Cole Boulevard/Bowker Road intersection. The canal is spanned by the Briar – Central Main Bridge. Elevation: 10

*P3a. Description: Only the portion of the canal at the intersection of Cole Boulevard/Bowker Road was recorded. Here, the Central Main Canal is an earthen waterway, has no formal lining, and measures approximately 36.4 meters in width at the bridge crossing. The depth and width of the canal at its' base could not be measured due to water. The canal extends approximately 26 miles north past El Centro on to Brawley.

*P3b. Resource Attributes: AH6

*P4. Resources Present: ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)



P5b. Description of Photo: Central Main Canal and the Briar – Central Main Bridge, Facing East

*P6. Date Constructed/Age and

Sources: ☒ Historic

☐ Prehistoric ☐ Both

*P7. Owner and Address:

Imperial Irrigation District (IID)

*P8. Recorded by:

James Whitaker HDR|e²m
9449 Balboa Ave, Suite 210
San Diego, CA 92123

*P9. Date Recorded:

April 8, 2010

*P10. Survey Type: Intensive

*P11. Report Citation: *Cultural Resources Survey Report for the Cole Boulevard Eastside Widening Project, Calexico, California*
HDR|e²m. Submitted to City of Calexico.

*Attachments: ☐ NONE ☒ Location Map ☒ Sketch Map (Aerial) ☐ Continuation Sheet ☐ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☒ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other (List):

L1. Historic and/or Common Name: Main Central Canal

L2a. Portion Described: ☐ Entire Resource ☐ Segment ☒ Point Observation **Designation:** Cole
Boulevard/Bowker Road intersection

b. Location of point or segment: UTM: Zone: 11N; 643954 mE/ 3618403 mN (G.P.S.) NAD83

e. Other Locational Data: The portion of the Central Main Canal surveyed is in east Calexico, California approximately one half-mile north of the SR 98/Bowker Road intersection. The canal is adjacent to the Briar Canal at the Cole Boulevard/Bowker Road intersection. The canal is spanned by the Briar – Central Main Bridge. Elevation: 10

L3. Description: Only the portion of the canal at the intersection of Cole Boulevard/Bowker Road was recorded. Here, the Central Main Canal is an earthen waterway, has no formal lining, and measures approximately 36.4 meters in width at the bridge crossing. The depth and width of the canal at its' base could not be measured due to water. The canal extends approximately 26 miles north past El Centro on to Brawley.

L4. Dimensions: (In feet for historic features and meters for prehistoric features)

a. Top Width: 36.4 meters

b. Bottom Width: Unknown, H₂O

c. Height or Depth: Unknown, H₂O

d. Length of Segment: ~ 200 feet

L5. Associated Resources: The Briar Canal is adjacent to the west.

L4e. Sketch of Cross-Section (include scale) **Facing:**

H₂O Present. Could not take measurements
other than Top Width.

L6. Setting: Level, just above sea-level, semi-rural, agricultural area

L7. Integrity Considerations: This portion of the canal has been disturbed by the construction of the Briar Main Central Bridge in 1971. The bridge footings were placed in the canal shoulders.

L8b. Description of Photo, Map, or Drawing: Cental Main Canal and Briar Central Main Bridge facing northeast

L9. Remarks: The 1940 Calexico, CA USGS map shows the Central Main Canal in blue line. The 1957 Calexico, CA USGS map



shows the Central Main Canal. The IID system as a whole may be historically significant and may qualify as an historic district under Criterion A, based on its' association with the rapid economic (agricultural) and social growth of the Imperial Valley in the early to mid-twentieth century. As one of the main branches of the All American Canal, this canal is likely a significant contributor to the IID system due to the high volume of water delivered to smaller canals within the region

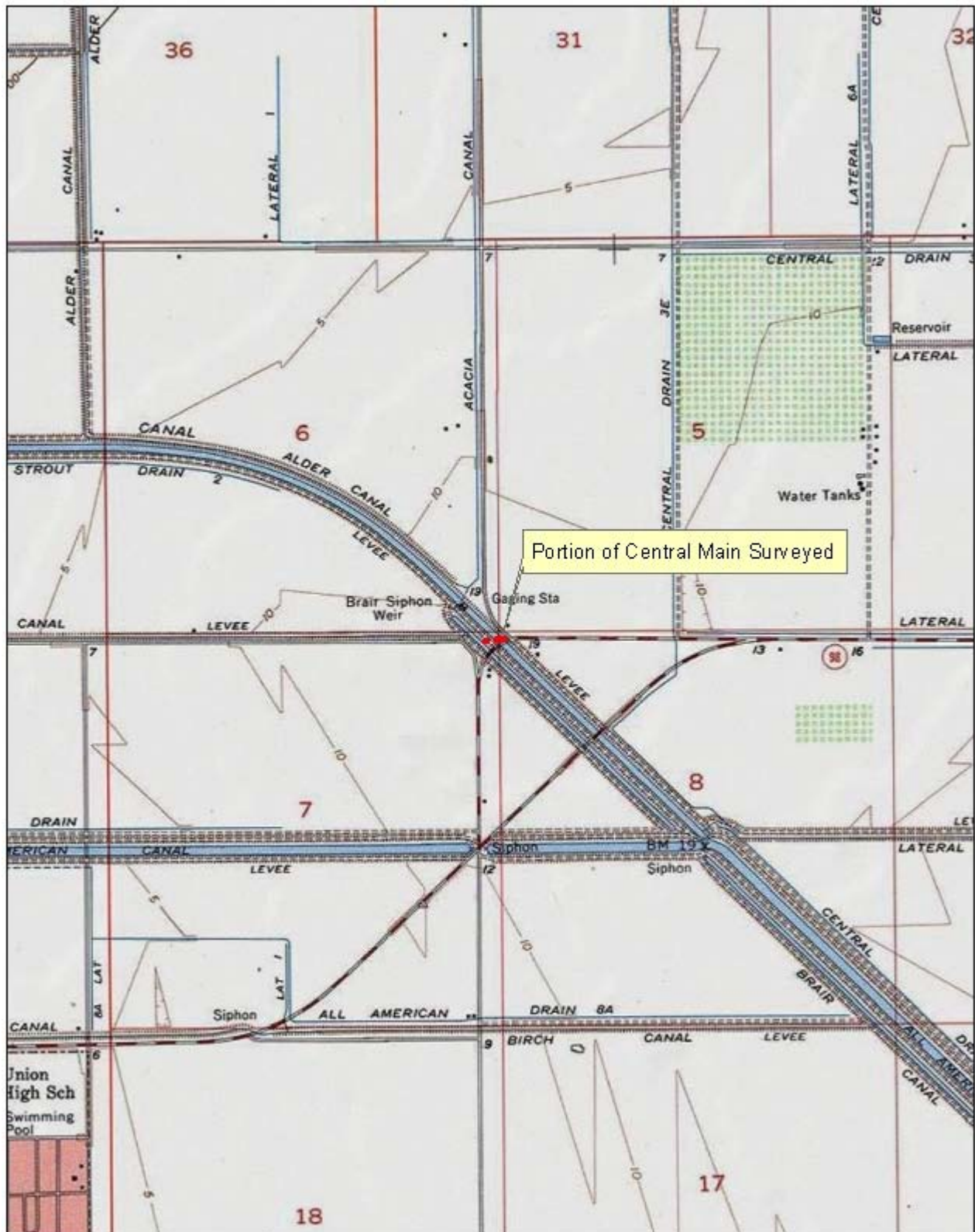
L10. Form Prepared by:

Seth Rosenberg, HDR|e²m
9449 Balboa Ave, Suite 210
San Diego, CA 92123

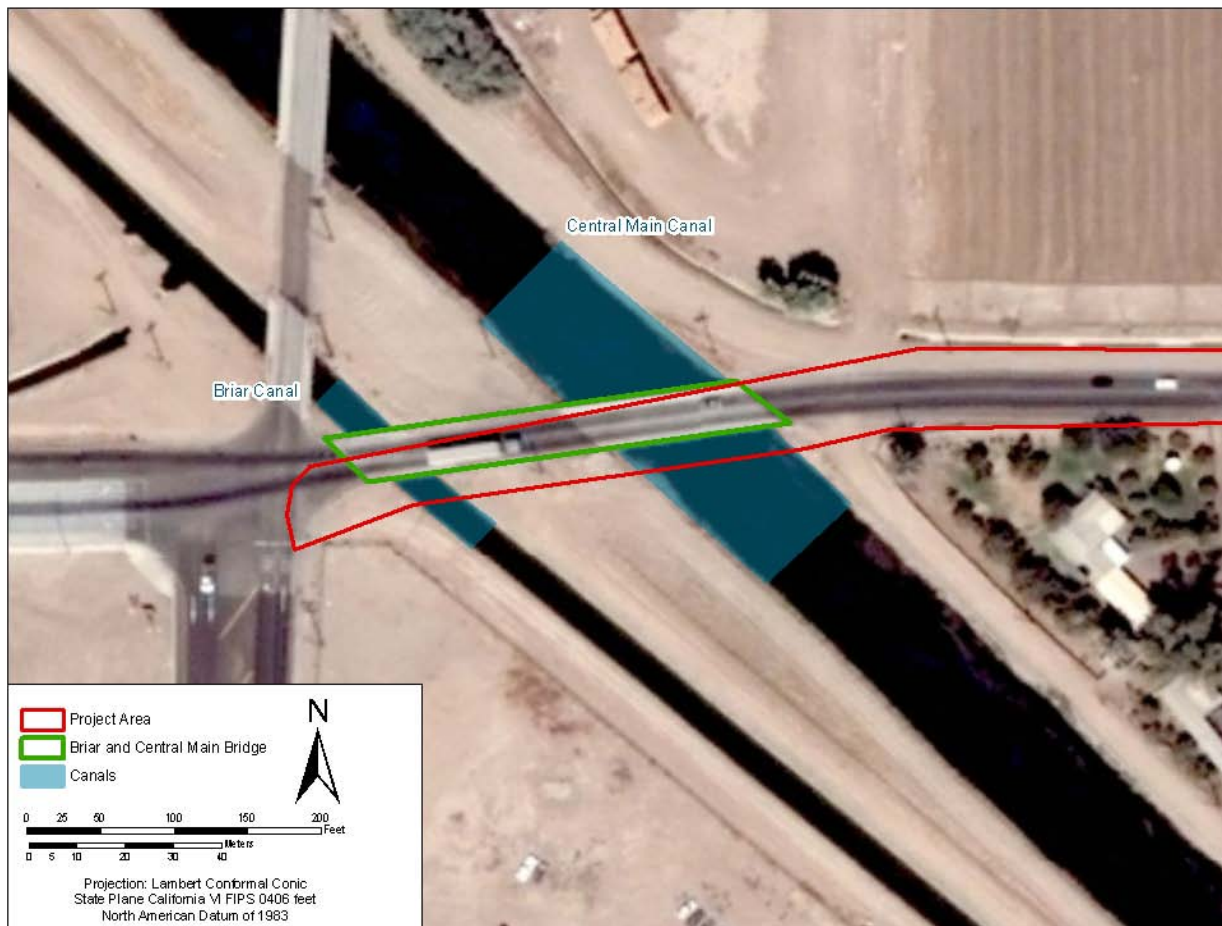
L11. Date: May 1, 2010

DPR 523E (1/95)

Page 3 of 4 *Resource Name or #: Central Main Canal
*Map Name: Calexico, CA *Scale: 1:24,000 *Date of Map: 1957



*Drawn By: **Nicholas Stadille**, HDR | e2m, 9449 Balboa Ave, Suite 210, San Diego, CA 92123 *Date: May 1, 2010



CONTINUATION SHEET

Property Name: Dogwood Canal

Page 1 of 3

PaleoWest originally recorded an approximately 3.5-mile-long (4.8 kilometer) segment of the Dogwood Canal in 2023 (Clark and Severen 2023). The Dogwood Canal branches off the Central Main Canal and runs west paralleling the Central Main Canal for approximately 2.5 miles (4 kilometers) before turning north and continuing along Dogwood Road for approximately 10.3 miles (16.5 kilometers). Several smaller laterals diverge off the Dogwood Canal along its route. The recorded canal segment consists of an open channel with earthen banks. The portions of the alignment have been lined with concrete and numerous check/drop structures have been built along its linear feature. Historical maps indicate that the canal is operational by the mid 1910's (USGS 1915). An evaluation of significance concludes that the Dogwood Canal meets Criterion 1 for listing on the CRHR (Clark and Severen 2023). However, the resource lacks integrity of setting, feeling, association, workmanship, and materials. Due to the loss of integrity, the character-defining aspects of the Dogwood Canal do not retain sufficient integrity to convey its significance under Criterion 1 and the resource is not eligible for listing in the CRHR.

In October 2023, Chronicle Heritage revisited the Dogwood Canal for the Heber 1 Solar Project (Clark and Torres 2024). A previously documented lateral (Dogwood Lateral 2) which is associated with the Dogwood Canal, was identified in the Project area. Historic maps indicate that the lateral was in use by the early 1940s (USGS 1943). The Dogwood Lateral 2 is in Section 32, Township 16 South, Range 14 East. The 0.5-mile-long lateral segment extends west of Dogwood Road north of the Heber Geothermal Energy Complex. The lateral consists of an open, concrete-lined structure that has a top width of approximately 8 to 10 feet (2.4 to 3 meters) and is an unknown depth. Chronicle Heritage's 2023 survey revisited portions of the canal that intersect Dogwood Road and Pfizer (Ware) Road with no noted changes in the canal observed since PaleoWest's 2023 recordation. (Clark and Torres 2024)

In May 2025, Catalyst Environmental Solutions conducted a survey for the proposed ORMAT Heber 1 Parasitic Solar Project. A portion of Optional Route 3 for the proposed interconnection alignment intersects the Dogwood Canal east of Dogwood Road in Township 16 South, Range 14 East, Section 33 and parallels the Dogwood Lateral 2. The Dogwood Canal is part of the Imperial Irrigation District (IID) canal system consists of an open channel that has a top width ranging between 20 to 60 feet (6 to 18 meters). It is primarily characterized by earthen banks with some segments noted as having concrete lining just west of Dogwood Road and along a 0.5 -mile stretch east of Pitzer Road. Exact dates of construction have not been established; however, historical maps indicate that the linear resource in this section was operational by at least 1915 (Clark and Severen 2023; USGS 1915). A previously documented lateral, Dogwood Lateral 2, associated with the canal was recorded by Chronicle Heritage in 2024 and revisited by Catalyst in 2025. (Clark and Torres 2024; Tipton 2025). No changes or alterations were observed since PaleoWest and Chronicle Heritage's documentation in 2023 and 2024 (Clark and Severen 2023; Clark and Torres 2024; Tipton 2025).

Reference: Clark, Tiffany, and Gena Severen (2023) Cultural Resources Assessment for the Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Facilities, Imperial County, California. Report prepared by Catalyst Environmental Solutions by PaleoWest, Monrovia, California.

CONTINUATION SHEET

Property Name: Dogwood Canal

Page 2 of 3

Clark, Tiffany, and Scott Torres (2024) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

Tipton, Katherine (2025) Cultural Resource Report for the ORMAT Heber 1 Parasitic Solar Project, Imperial County, California. Report prepared by Catalyst Environmental Solutions, Santa Monica, California

U.S. Geological Survey (USGS) 1915 *El Centro, California* (1:125,000) topographic quadrangle. Washington, D.C.

U.S. Geological Survey (USGS) 1943 *Heber, California* (1:62,500) topographic quadrangle. Washington, D.C.



Overview of Dogwood Canal at Dogwood Road. View to the south-southwest.

CONTINUATION SHEET

Property Name: Dogwood Canal

Page 3 of 3



Overview Dogwood Canal and headgate for Dogwood Lateral 2 at Dogwood Road. View to the west.

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION PRIMARY RECORD	Primary #: P-13-009306 HRI #: _____ Trinomial: CA-IMP-8492 UPDATE NRHP Status Code: _____
Other Listings: _____ Review Code: _____	Reviewer: _____ Date: _____

Page 1 of 4

Resource Name or #: Dogwood Canal

UPDATE

P1. Other Identifier: Dogwood Ditch

P2. **Location:** ☐ Not for Publication ☒ Unrestricteda. **County:** Imperial Countyb. **USGS 7.5' Quad:** El Centro and Heber, CA Date: El Centro 1957 (photorev. 1979), Heber 1957 (photorev 1976)
T 16 S; R 14 E; portions of irregular sections 140, 67, 113 and 21; S.B.B.M.

c. Address: n/a City: Unincorporated Zip: n/a

d. UTM: Zone 11; NAD 83; From 637241 mE/ 3625616 mN to 637309 mE/ 3623193 mN

e. Other Locational Data: Adjacent to Dogwood Road, situated south of Interstate 8 and north of Highway 99, crossing the Southern Pacific's Imperial and Gulf Branch line.

P3a. **Description:** Approximately 2900-foot segment of open, unlined irrigation canal in the Imperial Irrigation District, drawing water from the Central Main Canal. While the approximately 2900-foot portion of the canal that runs the length of the APE is predominantly unlined, the area adjacent to the railroad crossing has cement drainages. The canal is dug into the soil at grade level, with the water level occurring at varying depths below grade depending on percent capacity.P3b. **Resource Attributes:** HP20 (Canal/Aqueduct)P4. **Resources Present:** ☐ Building ☐ Structure ☒ Object ☐ Site ☐ District
☐ Element of District ☐ Other

P5a. Photograph or Drawing

P5b. Description of Photo: Looking northwest, 5/14/05, 05207.05 IMG7192

P6. **Age and Sources:** ☒ Historic ☐ Prehistoric ☐ BothP7. **Owner and Address:** Imperial Irrigation District
1284 Main Street
El Centro, CA 92243P8. **Recorded by:**Stacey C. Jordan, Ph.D.
Mooney • Jones & Stokes
9903 Businesspark Avenue
San Diego, CA 92131P9. **Date Recorded:** 27 June 2005P10. **Survey Type:** Intensive PedestrianP11. **Report Citation:** Jordan, Stacey and Andrea Craft. 2005. Cultural Resources Survey for the Widening of Dogwood Road City of El Centro, California. Prepared by Mooney • Jones & Stokes for the City of El Centro.**Attachments:** ☐ NONE ☒ Location Map ☐ Sketch Map ☐ Continuation Sheet ☒ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☒ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other:

State of California - The Resource Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #: **P-13-009306**
Trinomial: **CA-IMP-8492 UPDATE**

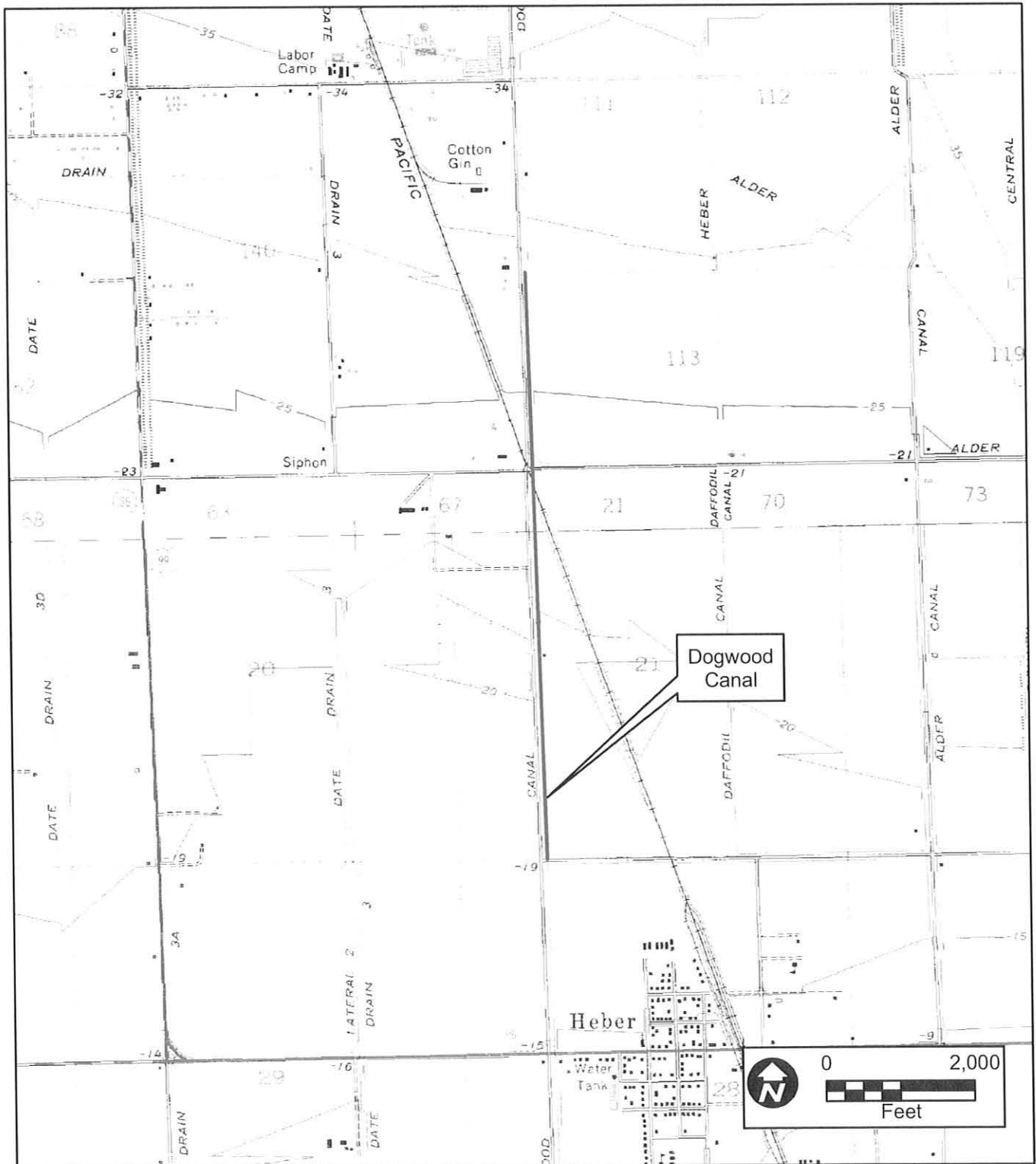
Page 2 of 4

Resource Name or #: Dogwood Canal

Map Name: El Centro and Heber

Scale: 1:24,000

Date of Map: 1979 and 1976



State of California — The Resources Agency
 DEPARTMENT OF PARKS AND RECREATION
**BUILDING, STRUCTURE, AND OBJECT
 RECORD**

Primary #: ~~P-13-009306~~
 Trinomial: ~~CA-IMP-8492~~ UPDATE

NRHP Status Code: 6Z

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Resource Name or #: Dogwood Canal

- B1. Historic Name: Dogwood Ditch
- B2. Common Name: Dogwood Canal
- B3. Original Use: Irrigation Canal
- B4. Present Use: Irrigation Canal
- B5. **Architectural Style:** Open , unlined irrigation canal
- B6. **Construction History:** The canal was in use by 1908, as indicated on USGS maps of that year.
- B7. **Moved?** ☒ No ☐ Yes ☐ Unknown **Date:** n/a **Original Location:** n/a
- B8. **Related Features:** n/a
- B9a. Architect: unknown b. Builder: unknown
- B10. **Significance:** **Theme:** Water Conveyance Systems **Area:** Southern California
Period of Significance: **Property Type:** HP20 (Canal/Aqueduct)
- Applicable Criteria:** n/a
- The Dogwood Canal, in use prior to 1908, is one of the earliest canals in the Imperial Irrigation District system. The canal, however, is a small part of a larger system of water conveyance in the Imperial Valley and is not, in itself, directly associated with events that have shaped history in the region. While the Imperial Valley's irrigation system as a whole may be historically important, the Dogwood Canal is not an independently significant resource and is not eligible for the National Register or California Register under Criterion A. Historical research conducted for this study did not reveal that the Dogwood Canal was associated with locally, regionally, or nationally important figures. As such, it is not eligible under either National Register and California Register Criterion B. This open irrigation canal is a typical element of water conveyance systems in rural, arid environments like the Imperial Valley, and does not represent a distinctive characteristic of a type, period, region, or method of construction. No individual of historic artistic importance can be linked to the construction or design of the structure nor is it an example of work possessing a high aesthetic value. It is unlikely that the Dogwood Canal has the potential to yield important historical information outside of the associations made in Criterion A, and is therefore not eligible to the National Register or California Register under Criterion D. Further, evaluations of cultural resources take into consideration the elements of age, location, context, association, uniqueness, and integrity. The canal was in use prior to 1908, and therefore over 45 years of age, and is in its original location. The original context and association of this branch have been maintained to date, with surrounding parcels still in agricultural use. However, the historical integrity of the canal has been lost as a result of the undergrounding of portions of the canal to the north of the APE.
- B11. Additional Resource Attributes: n/a
- B12. **References:** 1908 USGS El Centro 15' Topographic Quandrangle.
 1908 USGS Reconnaissance Map of the Salton Sink, California.
- B13. Remarks: none
- B14. **Evaluation:** Stacey C. Jordan, Ph.D.
Date of Evaluation: 27 June 2005

See attached Location Map

(This space reserved for official comments.)

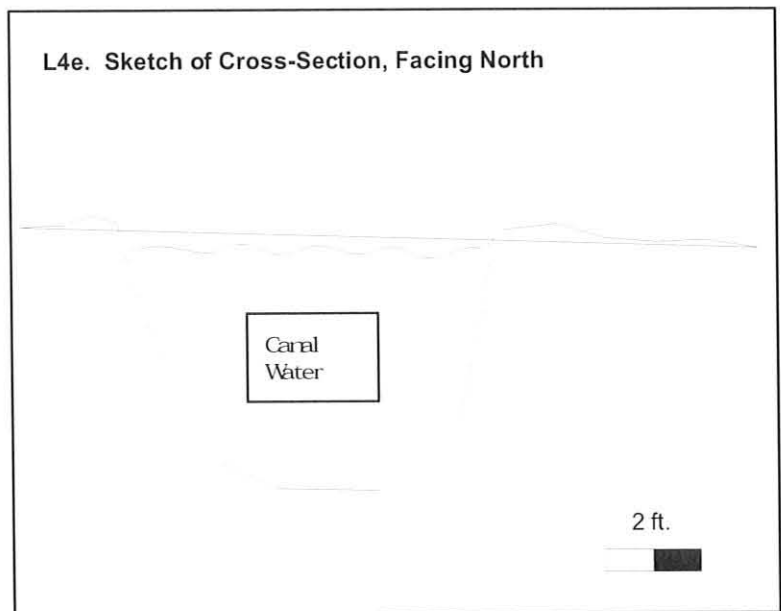
LINEAR FEATURE RECORDPrimary #: ~~P-13-009306~~
HRI #: _____
Trinomial: CA-IMP-8492 UPDATE

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Resource Name or #: Dogwood Canal

L1. **Historic and/or Common Name:** Dogwood CanalL2a. **Portion Described:** ☐ Entire Resource ☒ Segment ☐ Point Observation**Designation:** Dogwood Canal, El Centro to Heber segment**b. Location of point or segment** From 637241 mE/ 3625616 mN to 637309 mE/ 3623193 mN, adjacent to Dogwood Road, situated south of Interstate 8 and north of Highway 99, crossing the Southern Pacific's Imperial and Gulf Branch line.L3. **Description:** Approximately 2900-foot segment of open, unlined irrigation canal comprising part of the Imperial Irrigation District. While the approximately 2900-foot portion of the canal that runs the length of the APE is predominantly unlined, the area adjacent to the railroad crossing has a lateral control structure. The canal is dug into the soil at grade level, with the water level occurring at varying depths below grade depending on percent capacity.L4. **Dimensions**a. **Top Width:** approx. 10'b. **Bottom Width:** unknownc. **Height or Depth:** unknownd. **Length of Segment:** approx. 2900 ft.L5. **Associated Resources:** Central Main Canal, Imperial Irrigation District Water Conveyance SystemL6. **Setting:** On level desert terrain, now in agricultural use; adjacent to Dogwood Road

L4e. Sketch of Cross-Section, Facing North



2 ft.

L7. **Integrity Considerations:** The original use, context and association of this branch have been maintained to date, with surrounding parcels still in agricultural use. However, the historical integrity of the canal has been lost as a result of the undergrounding of portions of the canal to the north of this segment.L8. **Description of Photo, Map or Drawing** Looking northwest, 5/14/05, 05207.05 IMG7192L9. **Remarks:** noneL10. **Form Prepared by:**

Stacey C. Jordan, Ph.D.

Mooney • Jones & Stokes,

9903 Businesspark Avenue, San Diego, CA 92131

L11. **Date:** 27 June 2005L8a. **Photograph, Map or Drawing**

PRIMARY RECORD

Primary # P-13-008987

HRI # _____

Trinomial _____

NRHP Status Code _____

Other Listings _____

Review Code _____ Reviewer _____ Date _____

Page 1 of 2

*Resource Name or #: (Assigned by recorder) IID-CD-1

P1. Other Identifier: Dogwood Canal

*P2. Location: ☒ Not for Publication ☐ Unrestricted *a. County Imperial

and P2c, P2e, and P2b or P2d. (Attach Location Map as necessary.)

*b. USGS 7.5' Quad El Centro, Calif. Date 1979 T 15S; R 14E: NW corner of Sec 46; SB B.M.

c. Address Intersection of Dogwood and East Villa Rd. City El Centro Zip _____

d. UTM: (Give more than one for large and/or linear resources) Zone: 11; 637199 mE/ 3630294 mN

*e. Other Locational Data: (E.g., parcel #, directions to resource, elevation, etc., as appropriate.)

From El Centro drive east on I-8 to the Dogwood Road (S31) exit. Take the S31 exit north and drive for 2 miles. The Dogwood Canal is at the intersection of Dogwood Street and East Villa Road. The canal parallels Dogwood Street on the east side and runs north-south.

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)

The Dogwood Canal is a concrete-lined irrigation canal (approximately 14 feet across). The canal contains a date stamp (on the north side of East Villa Road) indicating that it was lined in 1951. The lining of the canal is smooth but exhibits some cracking. Dogwood Lateral 13 runs perpendicular to the Dogwood Canal on the north side of East Villa Road. There is a concrete drop approximately 50 feet north of East Villa Road with wood framing and two manually operated gates (which control the water flow). The Dogwood Canal is flanked by Dogwood Road to the west and fallow farm fields to the east. The canal is still in use.

*P3b. Resource Attributes: (See attributes and codes) HP20. Canal/aqueduct

*P4. Resources Present: ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)



P5b. Description of Photo:

(View, date, accession #) Southeast, 9/21/05, 05080021-CD-05-R1-13, overview of Dogwood Canal drop.

*P6. Date Constructed / Age and

Sources: ☒ Historic

☐ Prehistoric ☐ Both

1951

*P7. Owner and Address:

Roy and Louise Richter

561 Wensley

El Centro, CA 92243

*P8. Recorded by: (Name, affiliation, and

address) C. Dolan and J. Toenjes

EDAW, Inc.

1420 Kettner Boulevard, Suite 620

San Diego, California 92101

*P9. Date Recorded:

September 21, 2005

*P10. Survey Type: (Describe)

Intensive pedestrian survey

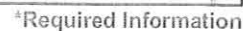
*P11. Report Citation: (Cite Survey report and other sources, or enter "none.") Apple et al. 2006 *Overview and Survey: Cultural Resources along the North Baja Expansion Project*. Prepared by EDAW, Inc., San Diego, California.

*Attachments: ☐ None ☒ Location Map ☐ Sketch Map ☐ Continuation Sheet ☐ Building, Structure, and Object Record

☐ Linear Resource Record ☐ Archaeological Record ☐ District Record ☐ Milling Station Record ☐ Rock Art Record

☐ Artifact Record ☐ Photograph Record ☐ Other (List)

* Date of Map: 1979



CONTINUATION SHEET

Property Name: Beech Canal and Drain

Page 1 of 3

PaleoWest originally recorded the Beech Canal, an approximately 6.5-mile-long (4.8 kilometer) structure that originates off the Central Main Canal in Calexico and drains into the New River. The resource contained several smaller laterals and associated drains diverging off along its length to the south and north sides of the canal. In 2023, PaleoWest recommended that the resource is not eligible for listing in the CRHR.

In October 2023, Chronicle Heritage revisited the Beech Canal as part of the Heber 1 Solar Project Heber 1 Solar Project (Clark and Torres 2024). A portion of the Beech Canal and one of the laterals north of Cole Boulevard and east of Dogwood Road was revisited in the western portion of Township 17 South, Range 14 East, Section 3. No changes in Beech Canal were observed since the February 2023 recordation by PaleoWest.

In May 2025, Catalyst Environmental Solutions conducted a survey for the proposed ORMAT Heber 1 Parasitic Solar Project. Segments of the proposed solar field and interconnection alignments abut and/or intersect Beech Canal and its laterals in Township 17 South, Range 14 East, Sections 3 and 4. This includes the lateral north of Cole Boulevard and east of Dogwood Road. The Beech Canal consists of an open, concrete-lined structure that has a top width ranging between 12 and 16 feet (3.6 and 4.8 meters) with an unknown depth. The laterals are smaller in size with a top width of approximately 6 feet (1.8 meters) and a bottom width of approximately 4 feet (1.2 meters). The depth of the laterals is roughly 4 feet (1.2 meters). The Beech Canal and Drain was originally observed and documented by PaleoWest in 2023 (Clark and Severen 2023) and revisited by Chronicle Heritage in 2024 (Clark and Torres 2024). No changes or alterations were observed by Catalyst during the 2025 survey (Tipton 2025).

Reference: Clark, Tiffany, and Scott Torres (2024) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

Clark, Tiffany, and Gena Severen (2023) Cultural Resources Assessment for the Dogwood Geothermal Energy Project, Dogwood Solar, and Heber 2 Solar Facilities, Imperial County, California. Report prepared by Catalyst Environmental Solutions by PaleoWest, Monrovia, California.

Tipton, Katherine (2025) Cultural Resource Report for the ORMAT Heber 1 Parasitic Solar Project, Imperial County, California. Report prepared by Catalyst Environmental Solutions, Santa Monica, California.

CONTINUATION SHEET

Property Name: Beech Canal and Drain

Page 2 of 3



Overview of Beech Canal and Drain at southern end of solar field area north of Cole Road. View to the south-southeast.



Overview of Beech Canal and Drain along Optional Route 3. View to the east.

CONTINUATION SHEET

Property Name: Beech Canal and Drain

Page 3 of 3



Overview from Central Main Canal of Beech Drain along Optional Route 1 and 2. View to the south.

CONTINUATION SHEET

Property Name: Daffodil Canal and Lateral 1

Page 1 of 2

In October 2023, Chronicle Heritage recorded Daffodil Canal and Lateral 1 during the Cultural Resource Assessment for the Ormat Heber 1 Solar Project (Clark and Torres 2024). The Daffodil Canal branches off the CM Canal near the Pfizer Road and Jasper Road intersection and is part of the IID system. This linear resource runs north along the west side of Pfizer Road for approximately one mile. The canal consists of an open concrete-lined channel that has a top width ranging from approximately 18 to 20 feet (5.4 to 6 meters) with an unknown depth; a 440-foot-long (134 meter) portion of the canal east of Heber 1 Geothermal Energy Facilities is buried. At least two check/drop structures are present along its course, each of which consists of gates with chute and cement walls that operate with a jack-type lifting mechanism resting on a wooden cross beam. The condition of the gates and hardware associated with these features suggest they have been replaced at some point and are not original to the structure.

The Daffodil Lateral 1 extends off the Daffodil Canal just north of the Heber 1 Geothermal Energy Facilities. The lateral overall measures 0.5 miles in length and consists of an open concrete-lined channel with a top width of approximately 10 feet (3 meters) and an unknown depth. Although the date of construction of the canal and lateral is not known, historical maps indicate that it was operational by 1940.

In May 2025, Catalyst Environmental Solutions conducted a survey for the proposed ORMAT Heber 1 Parasitic Solar Project. The eastern end of proposed Optional Routes 1, 2, and 3 of the interconnection alignment runs adjacent to a lateral canal (Daffodil Lateral 1) associated with the Daffodil Canal. Since its last recordation, no changes or alterations were observed by Catalyst during the 2025 survey (Tipton 2025).

Reference: Clark, Tiffany, and Scott Torres (2024) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

Tipton, Katherine (2025) Cultural Resource Report for the ORMAT Heber 1 Parasitic Solar Project, Imperial County, California. Report prepared by Catalyst Environmental Solutions, Santa Monica, California.

U.S. Geological Survey (USGS)(1940) *Heber, California* (1:62,500) topographic quadrangle. Washington, D.C.

CONTINUATION SHEET

Property Name: Daffodil Canal and Lateral 1

Page 2 of 2



Overview of Daffodil Lateral 1. View to the east.



Overview of headgates leading to Daffodil Lateral 1. View to the southeast.

CONTINUATION SHEET

Property Name: Date Drain No. 3

Page 1 of 2

In October 2023, Chronicle Heritage recorded Date Drain No. 3 during the Cultural Resource Assessment for the Ormat Heber 1 Solar Project (Clark and Torres 2024). The Date Canal is part of IID's canal system, which was initially built in the early twentieth century. The construction and operation of the Date Drain No. 3 and its associated lateral are an important event in the early settlement of the Imperial Valley. The canal significantly increased agricultural productivity between the New River and Alamo River.

The channel is an approximately 0.7-mile-long, L-shaped earth drainage ditch that includes a roughly 0.25-mile-long segment running in a north-south direction parallel to the eastern side of Dogwood Road. A 0.55-mile-long segment of the drainage runs west-east along the mid-section of Township 16 South, Range 14 East, Section 33. The drainage was constructed to remove excess water from irrigated fields and appears to be associated with the Date Canal. The upper width of the drainage is approximately 20 to 30 feet (6 to 9 meters) with a depth roughly 8 to 10 feet (2.4 to 3 meters). While the Date Canal appears on a 1915 topographic map; Date Drain No. 3 first appears on a 1957 topographic map (USGS 1915, 1957).

In May 2025, Catalyst Environmental Solutions conducted a survey for the proposed ORMAT Heber 1 Parasitic Solar Project. Portions of Optional Routes 1, 2, and 3 of the proposed interconnection alignments situated east of Dogwood Road parallel the historic drainage channel Date Drain No. 3. Since its last recordation, no changes or alterations were observed by Catalyst during the 2025 survey (Tipton 2025).

Reference: Clark, Tiffany, and Scott Torres (2024) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

Tipton, Katherine (2025) Cultural Resource Report for the ORMAT Heber 1 Parasitic Solar Project, Imperial County, California. Report prepared by Catalyst Environmental Solutions, Santa Monica, California.

U.S. Geological Survey (USGS) (1915) *El Centro, California* (1:125,000) topographic quadrangle. Washington, D.C.

U.S. Geological Survey (USGS) (1957) *Heber, California* (1:62,500) topographic quadrangle. Washington, D.C.

CONTINUATION SHEET

Property Name: Date Drain No. 3

Page 2 of 2



Overview of Date Drain No. 3 that parallels Routes 1, 2, and 3 at Ware Road. View to the east.



Overview of Date Drain No. 3 at Dogwood Road. View to the north

CONTINUATION SHEET

Property Name: 602 Dogwood Road

Page 1 of 3

In November 2023, Chronicle Heritage recorded 602 Dogwood Road during the Cultural Resource Assessment for the Ormat Heber 1 Solar Project (Clark and Torres 2024). At the time of this recording, a historic-era residential and accessory building (utility shed) were documented at the southwest corner of the proposed parasitic solar field (Clark and Torres 2024). The documentation by Chronicle Heritage in recorded a primary building with a vernacular single-family residence that is clad in T-11 siding and featured a low-pitched, side-gabled roof sheathed in composition shingles (Clark and Torres 2024). The noted wooden accessory building is located adjacent to the northeast corner of the residence and appears to have been utilized as a utility shed. The accessory building was noted as dilapidated and included an open doorway and flat roof. The building is clad in a combination of an oriented strand board and plywood sheeting. The boundary of 602 Dogwood Road is limited to the legal parcel boundary and was observed to be in fair condition.

In May 2025, Catalyst Environmental Solutions conducted a survey for the proposed ORMAT Heber 1 Parasitic Solar Project. During Catalyst's 2025 site revisit, the historic-era residential building was observed to be absent from the property, indicating it had been demolished or removed since the previous recordation. The accessory building (utility shed), however, remains present and was documented during the site visit. The accessory building appeared derelict with a flat roof and open doorway. Catalyst observed that panels of plywood sheeting were missing from the south, west and north façades of the structure (Tipton 2025). The initial recordation by Chronicle Heritage recommended the 602 Dogwood Road not eligible for inclusion in the CRHR. Based on the original recording and the 2025 revisit by Catalyst, the recommendation of 602 Dogwood Road as not eligible for listing in the CRHR remains appropriate (Clark and Torres 2024; Tipton 2025).

Reference: Clark, Tiffany, and Scott Torres (2024) Cultural Resource Assessment for the Ormat Heber 1 Solar Project, Imperial County, California. Report prepared by Chronicle Heritage, Arcadia, California.

Tipton, Katherine (2025) Cultural Resource Report for the ORMAT Heber 1 Parasitic Solar Project, Imperial County, California. Report prepared by Catalyst Environmental Solutions, Santa Monica, California.

CONTINUATION SHEET

Property Name: 602 Dogwood Road

Page 2 of 3



Overview of the south and west façades of the accessory building View to the northeast.



An overview of the where the residential building was noted in 2023. Red arrow points to the residential remains. View to the northwest.

CONTINUATION SHEET

Property Name: 602 Dogwood Road

Page 3 of 3



Overview of the parcel at 602 Dogwood Road. View to the northeast.



Overview of the parcel at 602 Dogwood Road. View to the south-southeast.