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## 5.3 CULTURAL RESOURCES

Hydrogen Energy International LLC (HEI or Applicant) is jointly owned by BP Alternative Energy North America Inc., and Rio Tinto Hydrogen Energy LLC. HEI is proposing to build an Integrated Gasification Combined Cycle (IGCC) power generating facility called Hydrogen Energy California (HECA or the "Project") in Kern County, California. The Project will produce electricity while substantially reducing greenhouse gas emissions by capturing carbon dioxide ($CO_2$) and transporting it for enhanced oil recovery (EOR) and sequestration.

The 315-acre Project Site is located approximately 6.5 miles west of the outermost edge of the city of Bakersfield and 2 miles northwest of the unincorporated community of Tupman in western Kern County, California, as shown in Figure 2-1, Project Vicinity Map. The Project Site is adjacent to an oil producing area known as the Elk Hills Oil Field Unit. The Project Site is currently undeveloped. Existing surface elevations vary from about 445 feet above mean sea level (msl) in the southwest corner to about 310 feet above msl in the northeast corner.

The Project will gasify petroleum coke (or blends of petroleum coke and coal, as needed) to produce hydrogen to fuel a combustion turbine operating in combined cycle mode. The gasification component feeds a 390 gross megawatt (MW) combined cycle plant. The net electrical generation output from the Project will provide California with approximately 250 MW of low-carbon baseload power to the grid. The gasification component will also capture approximately 90 percent of the carbon dioxide from the syngas at steady-state operation, which will be transported and used for EOR and sequestration (storage) in the Elk Hills Oil Field Unit. In addition, approximately 100 MW of natural gas generated peaking power will be available from the Project.

The Project Site and linear facilities comprise the affected study area and are entirely located in Kern County, California. These Project components are described below.

Major on-site Project components will include, as shown on Figure 2-4, Plot Plan:

- Solids Handling, Gasification, and Gas Treatment
  - Feedstock delivery, handling and storage
  - Gasification
  - Sour shift/gas cooling
  - Mercury removal
  - Acid gas removal
- Power Generation
  - Combined-cycle power generation
  - Auxiliary combustion turbine generator
  - Electrical switching facilities
- Supporting Process Systems
  - Natural gas fuel systems

- Air separation unit (ASU)
- Sulfur recovery unit
- Zero liquid discharge
- Carbon dioxide compression
- Wastewater injection wells
- Raw water treatment plant
- Other plant systems

The Project also includes the following off-site facilities, as shown on Figure 2-5, Project Location Map:

- **Electrical Transmission Line** – An electrical transmission line will interconnect the Project to Pacific Gas & Electric's (PG&E) Midway Substation. The interconnection voltage is expected to be 230 kilovolts (kV). The Project is considering two alternative transmission routes, both of which extend from the western edge of the Project Site to the north, and west to the north side of the substation. Transmission Alternative 1 is approximately 9 miles long and Transmission Alternative 2 is approximately 9.5 miles long.
- **Natural Gas Supply** – A natural gas interconnection will be made with either PG&E or Southern California Gas Company natural gas pipelines, both of which are located southeast of the Project Site. The natural gas pipeline will be approximately 7 miles in length. The interconnect will consist of one tap off the existing natural gas line, one meter set, one service pipeline service connection, and a pressure limiting station located on the Project Site.
- **Water Supply Pipelines** – The Project will utilize brackish groundwater supplied from the Buena Vista Water Storage District (BVWSD) located to the northwest. The raw water supply pipeline will be approximately 18 miles in length. Potable water for drinking and sanitary use will be supplied by West Kern Water District located near the State Route 119 (SR 119)/Tupman Road intersection (southeast of the Project Site). The potable water supply pipeline will be approximately 5.5 miles in length.
- **Carbon Dioxide Pipeline** – The carbon dioxide pipeline will transfer the carbon dioxide captured during gasification from the Project Site southwest to the custody transfer point. The Project is considering two alternative pipeline routes. Alternative 1 is approximately 2 miles in length, while Alternative 2 is approximately 2.5 miles in length.

The Project components described above are shown on Figure 2-5, Project Location Map, which depicts the region, the vicinity, the Project Site and its immediate surroundings for Project components.

All temporary construction equipment laydown and parking, including construction parking, offices, and construction laydown areas, will be located on the Project Site.

The disturbed acreage associated with the Project is summarized in Table 5.3-1, Project Disturbed Acreage.

**Table 5.3-1**
**Project Disturbed Acreage**

| Project Component | Temporary Disturbance | Permanent Disturbance |
|---|---|---|
| Project Site | 315 acres | 315 acres |
| Electrical transmission line | Alternative 1 – 15 acres<br>Alternative 2 – 15 acres | Alternative 1 – 2 acres<br>Alternative 2 – 2 acres |
| Natural gas line | PG&E – 2 acres<br>Southern California Gas Company – 2 acres | PG&E – previously disturbed<br>Southern California Gas Company – previously disturbed |
| Water supply line | BVWSD – 15 acres | BVWSD – previously disturbed |
| $CO_2$ line | Alternative 1 – 1 acre<br>Alternative 2 – 1 acre | Alternative 1 – previously disturbed<br>Alternative 2 – previously disturbed |
| Temporary Construction Areas | Included in Project Site | None |
| **Total Project Disturbance** | **348 acres** | **317 acres** |

Source: HECA Project
Notes:
BVWSD = Buena Vista Water Storage District
$CO_2$ = carbon dioxide

This section will analyze the potential impacts the Project may have on the previously recorded and newly discovered cultural resources located within the Project's Areas of Potential Effect (APE). The term "cultural resources" refers to prehistoric and historic sites of past human activity, historic buildings, structures, objects, districts, and sites and resources of concern to Native Americans and other ethnic groups.

This section includes a description of the Project area and the affected environment; existing site conditions; a summary of the prehistory, history, and ethnography; a summary of previously conducted cultural resources survey and their findings within 1-mile of the current Project APE; results of the archaeological and historic architecture pedestrian surveys of the current Project APE; and Native American consultation. Complete documentation of the cultural resources assessment is appended in the Archaeological Technical report (Confidential Appendix H, Cultural Resources).

The results of this cultural resources study indicate that significant cultural resources may be adversely impacted by Project actions within the APE. Mitigation measures, set forth in this section, should be employed to ensure avoidance and/or treatment of the potential affects to the cultural resources.

All cultural resources work for the Project was carried out under the direct supervision of an archaeologist who meets the Secretary of the Interiors Standards and Guidelines for Archaeology and Historic Preservation (36 Code of Federal Regulations [CFR] Part 62, Appendix A).

## 5.3.1 Affected Environment

### *5.3.1.1 Areas of Potential Effects*

The APE of the Project area varies between the Project Site and its associated linear routes. The APE for the Project Site requires a 200-foot buffer surrounding the perimeter of the Project Site.

The APE for the linear resources including water, gas, and transmission lines requires a 100-foot buffer zone (50 feet on each side of the linear center line). These APE buffer zones were delineated in accordance with the California Energy Commission (CEC) Rules of Practice and Procedure and Power Plant Site Regulations Revisions, Appendix B (g)(2)( C ) (CEC 2007). Figure 5.3-1, Cultural Resource Inventory Area, details the Project APE.

#### *5.3.1.2 Soils and Geology*

Geomorphically, the Project is on the northeastern face of the Elk Hills which is an anticlinal uplift along the western periphery of the San Joaquin Valley. The Elk Hills form the surface expression of an anticlinal fold composed of gravel and mudstone derived from the Coast Ranges to the west. The Elk Hills are being dissected by numerous streams that redeposit the material on an apron of small coalescing fans along the northeast flank of the hills which abut the much larger Kern River fan to the north.

The Project surficial deposits, as shown on Figure 5.15-3, Project Site Geologic Map (from Section 5.15, Geological Hazards and Resources), are described as Quaternary age alluvial gravel and sand of valley areas (Q); and bedrock at the surface and underlying alluvium consisting of Pliocene- to Pleistocene-age Tulare Formation which consists of alternating beds of sand and mudstone. According to Dibblee (2005) these deposits are described as stream-laid, weakly indurated pebble gravels, sands, and clays; light gray in color; pebbles are composed chiefly of Monterey siliceous shale and debris from bedrock in adjacent Temblor Range.

The linear facilities (natural gas and water pipelines) will be underlain by similar earth materials as the Project Site.

#### *5.3.1.3 Existing Conditions*

The Project Site is within and surrounded by the two primary land development undertakings in Kern County: oil and gas development and agriculture. The historic agricultural development of the region began in the late 1860s with the arrival of the first American and European settlers. The area directly north and east of the Elk Hills geographic feature was historically and prehistorically dominated by a large network of marshland, sloughs, lakes and rivers channels that were systematically drained for agricultural development beginning in the late nineteenth century. This agricultural land development has significantly altered the natural environment and caused (in many places where active irrigation is not used) the surrounding Upper Sonoran desert ecozone to dominate. Modern agricultural cultivation in the area of the APE includes cotton, wheat, various stone fruit, tree nuts, hay/alfalfa, and dairy production.

The oil and gas industry in the area has contributed to the massive development of the Elk Hills. The Naval Petroleum Reserve (NPR 1) established and maintained by the Navy in the early twentieth century kept the development of the area relatively regulated until 1998 when NPR 1 was purchased by private oil and gas companies. The areas natural environment has been preserved in part but altered physically and visually by the development of numerous pipelines, well field access roads, well pads, and tank farms.

The California State Water Project is located directly north and east of the Project Site and the Project linears will cross over this aqueduct three times (the natural gas line at State Route (SR) 119, the water line at Tupman Road, and the electrical transmission line). The State Water

Project itself was a huge undertaking that impacted the area immediately surrounding it with the construction of its massive dirt berms and other infrastructure.

### *5.3.1.4 Site Disturbance within the Project Area and APEs*

The primary sources of previous disturbances to the Project area and APE include general agricultural and livestock grazing; local, state, and federal irrigation and water resource development; road construction and maintenance; and oil and gas field infrastructure development, expansion, and maintenance.

### *5.3.1.5 Culture History*

California as a geographic unit has cultural history stretching back nearly 16,000 to 15,000 years before present (B.P.). Unlike many of the other regions across the North American continent, the California area does not possess a clear cultural chronology that breaks down into clear and defined cultural phases reminiscent of the North American Southwest or Northern Plains. This is not to say these cultural developmental phases are not present – they are often more focused on a unique geographic region of which California has several. What follows is a composite culture history of the Southern San Joaquin Valley using the physical evidence that exists for the Project area's immediate vicinity and educated inference from archaeological research done in the surrounding regions of California.

**The Late Pleistocene**

There is a great deal of debate in Central California on the actual date of arrival and habitation by human groups in the region. The time period itself is one of contention across the continent as there is very little physical evidence that clearly supports a human occupation of the interior of the North American continent prior to 15,000 B.P.

Within California several sites have been tested and excavated that have were toted as being 20,000 to 500,000 years old. These dates were later reexamined and found to be based on unusual or questionable artifact associations, often misinterpreted stratigraphic associations, and erroneous radio carbon samples (Moratto 1984).

There are only a handful of known Paleo-Indian sites in California that have minimal but stronger archaeological evidence. The majority of these sites range between 15,000 and 16,000 B.P. and are often located along the Pacific shoreline and the interior of southern California and Northern Baja (Moratto 1984). There is very little evidence within the interior of Central California, and specifically the Southern San Joaquin Valley that shows any evidence of human occupation prior to 12,000 B.P. (Moratto 1984). There is only speculation if humans occupied or traveled in the interior of California at the time of the earliest North American human dates. This is due mainly, as mentioned before, to the nearly complete lack of physical evidence. The presence of other sites in California in surrounding sub-regions makes it likely that humans moved through the interior regions of California. The lack of artifacts and sites from this early period may be due to the environment of that period. The San Joaquin Valley was an active depositional environment and that trend only increased in the following periods. It is very likely that the earliest evidence of human occupation in the interior of California has been buried by the alluvial deposition of the later periods, and is at a prohibitively deep stratum to not be

encountered as more then the occasional surface find or in the side wall of a substantial flood event.

The environment of the southern San Joaquin Valley 15,000 years B.P. was a colder and dryer environment then today. Large, deep inland lake systems dominated the lower elevations with more wet or mountain environment plant communities stretching to elevations much lower then today, supported by significant, relatively low elevation snow fall. The environment supported an ecosystem dominated by mega fauna species including mammoth, mastodon, short-faced bear, American lion, Saber tooth cat, dire wolf, steppe bison, giant ground sloth, and giant beaver. Other notable Late Pleistocene animals whose remains have been found within the Project area include American camels, American cheetahs, and deer. Between 12,000 and 10,000 (B.P.) a majority of these species had gone extinct. The reason behind this mass extinction that occurred across the entire western hemisphere is widely debated. Many find correlation of the arrival of humans onto the continent and this extinction, citing over-hunting and resource competition the killing blow for these species. Others point to the rapidly changing climatic and geographic environment of the late Pleistocene and early Holocene. Regardless of the ultimate cause of the extinction, the humans and animals of the late Pleistocene faced a relatively rapid changing environment that ultimately altered the living pattern and technology of the people living in it. These sites are often associated with a large lithic technology known in California as the Fluted Point technology or the Western Fluted Point Tradition. This tradition coincides temporally and shares many traits with the late Llano lithic tradition found throughout the North American continent east of California. This technology is typified by the Clovis Point style projectile point which is comprised of thin bifacially thinned point with a distinctive "fluting" flake struck from the base along the median axis of the tool. This results in a facially indented biface that allows the user to preserve a longer area of blade margin without notching, and a more narrow profile at the hafting element of the tool which would be advantageous for strength during the piercing of a prey animal.

Western Pluvial Lake Tradition

The end of the Pleistocene and early Holocene saw a series of mass extinctions and rapid environment changes that altered the human population's basic habitation and hunting adaptations. Archaeological sites dating around 11,000 to 8,000 B.P. are in much higher quantity in the interior regions of California. They are often found in the San Joaquin Valley along the prehistoric shore lines of large marsh lakes (Moratto 1984, Fagan 2003). These lakes were the remnants of the deep clear water lake bodies that dominated the Pleistocene environment. With the increase in temperature and alluvial erosion and sedimentation of the San Joaquin Valley the earlier larger lakes began to recede and develop broad shallow marshes along their banks. This transition leads to a huge rise in water fowl, shallow water fish, turtles, and marsh plants that attract a wider variety of game animals. At the same time the areas of land once densely covered in mountainous flora are being overgrown with more temperate food bearing trees and grasses that can capitalize on the warmer temperatures and more arid conditions. All these environmental results provide a broader base of edible food stuffs for the human population of California. These geographic transitions to shallower marsh land and a warmer drier climate may be a contributing factor to the mass extinctions of the mega-fauna in the late Pleistocene. It is not unreasonable to think that humans did their part in hunting the large animals of the late Pleistocene but perhaps humans did not hunt these creatures to extinction but

simply out-competed them by being uniquely suited to exploit and quickly adapt to the broad food base this environmental change provided for them.

By 11,000 B.P. humans are exploiting a wider range of plant foods and hunting, with refined lithic technologies, a wider variety of game. The period between 10,000 to 8,000 B.P. period sees the development of small scale village areas with repetitive occupations or found along the shores of the marsh lakes, rivers, and sloughs that formed from the siltation of the late Pleistocene lake systems. Mega-fauna species were largely extinct by this period and the dominant food sources included fish, mollusks, water fowl, and larger animals, such as elk, that frequented the marshy grass lands. The archaeological sites dating to this period also show a strong dependence on rabbits and antelope which lived and grazed on the semi-arid scrub and grasslands immediately surrounding the marshlands (Hartzell 1992). This period is known as the Western Pluvial Lake Tradition as this pattern of habitation and broad base resource procurement was practiced throughout California, Oregon, and the Great Basin. A distinctive associated tool kit develops in this period consisting of a large leaf-shaped biface tool tradition, numerous scrapers, and atlatl spurs. This period is represented in the southern San Joaquin Valley by only a few deeply buried sites located along the eroded prehistoric shore lines of Tulare Lake and Lake Buena Vista (Moratto 1984). This period of the Early Holocene in general is relatively un-researched with only a few known associated sites.

The Holocene

After 8,000 B.P. another long environmental period with few representative sites in the southern San Joaquin Valley emerges. The region in this period has continued to become drier and warmer. The lakes that were the foremost resource provider of the previous period are continuing to shrink and fluctuate with increasingly variable annual precipitation. From 7,000 to 4,000 B.P. much of the known human history of California is recorded from sites near the coastline or from areas north in the San Joaquin Valley. What little archaeological evidence exists of this period tells of more human adaptations to the changing environment. Projectile points become smaller, indicating a shift towards bow and arrow technology, groundstone milling stones become a prevalent and ubiquitous tool that is indicative of a major shift in the people's diet of this period.

As the marshes and lakes shrank, the savannah grass lands and shrub deserts of sage and juniper that surrounded them expanded. These ecological zones continued to spread further across the valley floor and expand into the foothills of the mountains. This environmental shift again pushed people to adapt their diet and living pattern to exploit a widening resource base. Seasonal grasses and vegetables became the higher priority food source and groups migrated with the seasons to exploit this broad spectrum of food. Being localized around the diminishing lake and marsh systems would not have supported the number of individuals it had a millennia before (Fagan 2003). As mentioned before, this period has very few representative sites and this is often interpreted as a reflection of the highly mobile lifestyle the people practiced during this period. Settlements were rarely occupied more then a few weeks and most of the tool kit was portable or expedient and left very little remains.

The last half of this period experiences the peak and regression of the Altithermal environmental period that had led to the relatively erratic weather patterns, wide precipitation variability, very high temperatures, and increasingly drier environment. At the height of the Altithermal it is believed that much of the interior of California was covered with savannah grasslands and scrub

desert. As the Altithermal began to subside, the lakes and marshlands began to reappear and by the late Holocene the environment variability leveled to nearly modern conditions.

The Holocene and the Elk Hills Area

Near the end of the Altithermal, a larger number of sites are represented in the archaeological record in the vicinity of the Elk Hills and Lake Buena Vista dating very tenuously to between 5,000 and 4,000 B.P. These dates are based on radiocarbon samples associated with deeply stratified fresh water mussel shell in the Elk Hills (Jackson et al. 1999). As the environment began to normalize and approach near modern conditions, the lakes, marshes, and sloughs on the valley floor began to revitalize. Oak trees and other temperate plant species began to spread to lower elevations along the river drainages and in the wetter valleys. Plant foods stay an important food supply but fresh water mollusks, fish, water fowl, and elk return as staple food sources. As the environment offered more and more stable food sources the population of California began to steadily increase. By 3,000 to 2,000 B.P., this increase was leading many groups to the brink of starvation as more and more people competed for a large but limited food supply. It is believed that this stress led the people of California as a whole to the development of massive trade networks and their reliance on acorns that maintains relatively unchanged until European contact in the late sixteenth and early seventeenth centuries.

From 3,000 B.P. to the near protohistoric contact period, the archaeological record of the Elk Hills area shows an almost continual period of use. The extensive marshlands of Buena Vista Lake, Kern Lake, and their huge interconnected sloughs were fed seasonally by spring and winter flooding of the Kern River. These riparian areas were the center of the Southern San Joaquin Valley sub-regions human occupation, as much of the immediately surrounding area was dominated by near desert scrub lands, much like today.

The Buena Vista Basin's cultural chronology has been categorized and seriated by Hartzell (1992) based on excavations at several Buena Vista Lake and Slough sites including the Buena Vista site (KER-116) and the Wedel Sites #1 and #2. Hartzell's first phase for the Late Holocene extends from 4,000 B.P. to 2,000 B.P. and is indentified by extended burials, Pinto and Elko projectile points, milling stones and manos, and an increase in the variety of lake fish and land mammals present in associated middens. This phase ends around 2,000 B.P. and transitions into a second phase that lasts until approximately 1,000 B.P. This second phase is identified with flexed burials, Cottonwood triangular projectile points, the appearance of the first semi-permanent house structures, clay lined storage pits, and an explosion in the variety and numbers of lake and land animal remains present in the site middens. This period also shows evidence of the revitalization of long distance trade and the exploitation of animal and plant resources from well outside the immediate lake shore area being brought back to the lake villages for processing and consumption. The final phase begins in around 1,000 B.P. and continues until the historic period. Hartzell (1992) notes that in this late period the lake shore sites are not as continually occupied as in earlier periods. This change coincides with a warm period that would have lowered lake shore levels and made the water more alkali. It is thought from sites along the eastern fringe of the Elk Hills and along the Buena Vista Slough that much of the area's population moved to where the pluvial environment was more stable but also incorporated a larger amount of foraging and inter-area and regional trade. In this period hopper style mortars and associated groundstone pestles appear suggesting the use of acorns as a dietary mainstay. An increase in trade material from the Santa Barbra Coast and Trans-Sierra locations gives evidence of this area being a possible focal point for interregional trade. The latter half of this

phase correlates with a protohistoric period evidenced by the presence of glass trade beads. The villages in this period are thought to be the historic Tulamni Yokut Village of *Tulamniu* which was visited and attacked by the Spanish in the late eighteenth and early nineteenth centuries.

The Spanish and Mexican Period

Southern California and the Pacific Coast had been visited by Europeans since the early sixteenth century. With the development of the Spanish mission system and establishment of the first Franciscan mission at San Diego in 1769, California was firmly placed in the historic timeline. European trade goods were likely not unknown to the inhabitants of the Southern San Joaquin Valley but direct contact was rarely made. The Southern Valley Yokuts were no doubt keenly aware of the Franciscan missions as their southern and western neighbors, the Chumash, were strongly integrated into the mission system. European trade goods were not uncommon and are often found in historic period burials in the form of trade beads. It is also well documented that many Chumash neophytes fleeing the oppressive mission system went to the interior of California and hid amongst the Yokuts. It is documented that very few neophytes were ever recaptured if they made it to the valley.

The southern San Joaquin Valley was not visited by Europeans until 1772 when Don Pedro Fages entered through the Tejon Pass, south and east of the Elk Hills in a meandering overland search of southern California for fugitive Indians neophytes between San Diego and San Luis Obispo. Fages' party traveled west along the foothills of the Tehachapi Mountain range arriving at the Tulamni Yokut village of Tulamniu along the shore of Buena Vista Lake. Fages named the village Buena Vista making notes on the huge expanse of tule reeds giving the region its historical Spanish name of Tularenos. The southern San Joaquin Valley was seen as uninhabitable, and not suitable for settlement or a mission due to the marshy landscape and the perception of the interior native population as dangerous heathens that actively aided in the corruption of the mission neophytes (Latta 1949). The next recorded visit by a European was Padre Francisco Garces in 1776 who entered the valley through the Tehachepi Mountains and traveled around the Elk Hills and Bakersfield area looking for possible sites for a new mission, although no missions were constructed in the southern San Joaquin Valley. Other Franciscan monks came into the Elk Hills area mainly traveling east from Santa Barbra and San Luis Obispo towards the Mojave Desert and the Colorado River. The region was only sporadically visited by Europeans over the following 50 years, usually by military or militia forces from the coastal missions and presidios searching for fugitive neophytes or stolen cattle or horses (Jackson et. al. 1999). The largest incursion came in 1824 in the wake of the Chumash revolt at the Santa Barbra mission. A vast majority of the Chumash neophytes, fighting against the oppressive mission system and rising death rate, took the Santa Barbra mission and held it for several days against the Spanish military trying to remove them. When the rebelling party, numbering over 400, left the mission they fled north and east towards the southern San Joaquin Valley. This group of Chumash hid amongst the Tulamni villages along Buena Vista Lake and Slough. Several Spanish led military forces entered the valley to apprehend the rebels but were foiled when they were defeated in small skirmishes with the Yokuts. Many of the Chumash rebels later returned to the mission after the Franciscan Padres, escorted by a military force, entered the Buena Vista Lake area and convinced them to return.

The decades following this incident saw very few European visitors, other then by Spanish ranchers or militia attacking groups for punitive raids and to capture slaves. In 1833 a malaria epidemic swept through the tribes of the San Joaquin Valley decimating the population. Many

early American explorers of the mid-1800s commented on the land being essentially depopulated in the aftermath of the epidemic (Latta 1949).

American Historic Period

The areas cultural dynamic remained relatively unchanged for much of the nineteenth century. When California became a part of the U.S. in 1848, much of the state was flooded with American settlers and gold miners, but not the southern San Joaquin Valley. European and American settlers found the area unsuitable for settlement as much of the area was still a large marshland with its surrounding areas dominated by a very dry scrub desert and a majority of it still occupied by Native Americans. In 1851 the Yokuts along with several other San Joaquin Valley tribes, agreed to relinquish their land and signed a treaty that was never ratified by Congress. The tribes were moved to Fort Tejon in the Tehachapi Mountains which proved to be a logistical failure, and many of the tribes' people were moved again in 1859 to the Tule River near Porterville and again in 1873 to the Tule River Reservation east of Porterville. A small group of Native Americans stayed in Fort Tejon forming a small community, but none of the groups ever populated the Elk Hills or Buena Vista Lake area again (Krober 1925, Latta 1949).

The Elk Hills were seen as barren wastes surrounded by impenetrable marshes and more barren desert through the remainder of the 1800s. By the late 1860s and 1870s, the area surrounding the Elk Hills was being transformed into thousands of acres of farmland by way of massive irrigation and draining projects along the Kern River, Buena Vista Lake and Slough. The majority of the land along the Buena Vista Slough between the Elk Hills and Buttonwillow was owned by the Miller and Lux and Kern County Land companies. This area was not seen as decent agricultural land and was used for cattle ranching until 1877 when an intense drought period left the Kern River completely dry. Ranchers and land developers began massive ditch and well digging projects across the Buena Vista Lake and Slough area. The Buena Vista Reservoir was funded and built by the Miller and Lux and Kern County Land companies to help alleviate the situation. After this period the ranchers of the area began to seek out suitable fields for alfalfa and hay production as natural grass growth was seen as no longer sufficient to feed the valley's booming livestock industry (Bartel 2008). This prompted the two prominent land owners to begin large scale projects to drain and level the Buena Vista Slough for agriculture. Eventually this area became the focus of a large scale international marketing campaign that brought families from Europe and the eastern U.S. to start farms and vineyards. Land leveling and water projects are still undertaken today as the area north of the Elk Hills has become a large agricultural area providing primarily cotton, alfalfa, stone fruit, tree nuts, and livestock grazing.

Interest in possible petroleum deposits was only in its infancy at that time and the Elk Hills were rarely visited and generally not used.

People had been utilizing the tar pits near McKittrick over several millennia and by the late 1800s asphalt and tar taken from the pits was a major commodity and used throughout California (Baker 2000). This deposit had not gone unnoticed by oil companies, but any large scale attempt to develop the resource would not occur until the twentieth century.

Twentieth Century to Today

A large oil deposit found in the Kern River oil field near Bakersfield in 1899 sparked the interest of oil explorers and throughout Kern County. By 1910 the entire Elk Hills had been bought. Standard Oil, Southern Pacific, and Associated Oil were the three largest land owners (Baker

2000). The Government, especially the Navy, became concerned at this rapid industrial growth and stepped in, stopping the sale of all public lands on the Elk Hills. In 1910 only 20 wells were dug with minimal output. By 1918 only 35 wells had been dug. In the fall of 1918, Standard Oil began the drilling of Hay No. 1 and in January 1919 the well struck oil and produced a modest 200 barrels of oil a day. By the mid-1920s several other companies had opened oil camps that were producing up to 4000 barrels of oil a day. These strikes proved that oil reserves were present on the Elk Hills and another land rush began. The Navy, concerned at the possible depletion of this resource moved to prevent claim filings. The Navy also began to drill along the edge of federal lease land in an attempt to slow the depletion. Through the 1930s, it was seen as a race against time and the Navy made several deals with private firms in an attempt to secure as much of the oil as possible. At the height of World War II the Navy began to post officers as guards throughout the Elk Hills oil camps. In 1944, an oil shortage compelled Congress to increase oil production from 15,000 to 65,000 barrels per day. In June 1944, the Federal Government enacted Public Law 343 transferring all public land leases to the Navy's jurisdiction (Baker 2000). In less then 8 months, 312 new wells had been dug for the Navy ending in 1945 with the end of the war.

It was during this period that the Navy began to maintain a small force in the Elk Hills. A Construction Battalion (CB) was stationed on the Elk Hills and their first priority was to build and improve the roads of the area. Well operation was usually undertaken by skilled workmen leaving the CBs time for other undertakings. The CBs surveyed section lines, installed brass section markers, built barracks, staked over 750 oil wells, graded for over 400 wells, staked over 100 miles of roads, water lines, and oil and gas mains.

In 1948 the Navy and Standard Oil amended their unit plan and Standard Oil was named the unit operator. By the 1950s, the Elk Hills produced nearly 20,000 barrels of oil a day. In 1976, the Elk Hills Reserve was opened to maximum production. The Navy sold its reserves in 1998, and the Elk Hills are (currently) privately owned by several oil companies.

#### *5.3.1.6 Personnel Qualifications*

The cultural resources personnel who conducted and/or supervised the field survey, conducted the background research, and completed the technical report (Confidential Appendix H, Cultural Resources Technical Report) and this Application for Certification (AFC) section are:

- Reid Farmer, MA, RPA (URS Corporation [URS], Cultural Resource Specialist/Principal Investigator)
- Josh McNutt, MA, RPA (URS, Archaeologist, Field Director)
- Sarah Mattiussi, BA (URS Archaeologist, Crew Chief)
- Juston Fariello, BA (URS, Archaeologist, Monitor/Crew Chief)
- Brian Shaw, BA (URS, Architectural Historian)
- Tim Slowick, BA (URS, Archaeologist Technician)
- Clemens Haltern, BA (URS, Field Technician)
- Marcia Meier, MA (URS Senior Staff Archaeologist)

### *5.3.1.7 Previous Research, Site Record, and Literature Review*

URS archaeologists, Josh McNutt and Sarah Mattiussi, performed several site record and literature reviews at the Southern San Joaquin Valley Archaeological Information Center (Information Center) located on the campus of California State University Bakersfield. Mr. McNutt and Ms. Mattiussi preformed three separate record searches due to time constraints and Project alterations. All relevant reports and site records within a 1-mile radius of the Project APE were reviewed. Site forms and previous cultural Project reports within the Project area and the APE were photocopied and used as research material and in field reference during field work.

The records search identified a total of 100 previous cultural research projects and 188 previously recorded archaeological and historical sites. Table 5.3-2, Previously Recorded Sites, and Table 5.3-3, Previous Cultural Resource Inventories, are summaries of these record searches. Figure 5.3-2, Previous Cultural Inventories Within 1 Mile of the APE, provides the locations of previous cultural inventories from the Information Center.

**Table 5.3-2**
**Previously Recorded Sites**

| Site Number | Site Type | Temporal Association | Within or Outside APE |
|---|---|---|---|
| 86 | Burial Mound | Prehistoric | out |
| 88 | Burial Mound | Prehistoric | out |
| 89 | Lithic, Beads, and historic Glass | Prehistoric | out |
| 124 | Shell and Lithic Midden | Prehistoric | out |
| 124 | Shell Midden | Prehistoric | out |
| 125 | Shell and Lithic Midden | Prehistoric | out |
| 126 | Shell and Lithic Midden | Prehistoric | in |
| 171 | Occupation site | Prehistoric | in |
| 173 | Village site | Prehistoric | out |
| 173 | Historic camp | Historic | out |
| 179 | Burial Mound | Prehistoric | out |
| 180 | Prehistoric habitation | Prehistoric | out |
| 325 | campsites | Prehistoric | out |
| 325 | Prehistoric Campsite | Prehistoric | out |
| 358 | Campsite/village | Prehistoric | out |
| 358 | Shell and Lithic Midden | Prehistoric | out |
| 359 | Lithic scatter | Prehistoric | out |
| 360 | Historic Glass scatter | Historic | out |
| 388 | Crescent artifact | Prehistoric | out |
| 666 | Shell and Lithic Midden | Prehistoric | out |
| 667 | Shell and Lithic Midden | Prehistoric | out |
| 676 | Village site | Prehistoric | out |
| 1493 | Lithic Scatter | Prehistoric | out |
| 2076 | Shell and Lithic Midden | Prehistoric | in |
| 2415 | Lithic scatter | Prehistoric | out |
| 2416 | Lithic scatter | Prehistoric | out |
| 2418 | Lithic Scatter | Prehistoric | out |
| 2419 | Lithic scatter | Prehistoric | out |

**Table 5.3-2**
**Previously Recorded Sites**

| Site Number | Site Type | Temporal Association | Within or Outside APE |
|---|---|---|---|
| 2422 | Shell Midden | Prehistoric | out |
| 2461 | Lithic scatter | Prehistoric | out |
| 2462 | Shell and Lithic Midden | Prehistoric | out |
| 2464 | Shell and Lithic Midden | Prehistoric | in |
| 2485 | Village site | Prehistoric | in |
| 2485 | Lithic and groundstone scatter | Prehistoric | out |
| 2718 | Lithic Scatter | Prehistoric | out |
| 2719 | Shell and Lithic Midden | Prehistoric | out |
| 2720 | Lithic scatter | Prehistoric | out |
| 2721 | Shell and Lithic Midden | Prehistoric | out |
| 3076 | Shell and Lithic Midden | Prehistoric | out |
| 3077/H | Village Site/historic features | Multi-component | in |
| 3078 | Shell and Lithic Midden | Prehistoric | out |
| 3079 | Shell and Lithic Midden | Prehistoric | out |
| 3079 | Shell and Lithic Midden | Prehistoric | out |
| 3079 | Shell Midden | Prehistoric | out |
| 3080 | Village site | Prehistoric | out |
| 3087 | Shell and Lithic Midden | Prehistoric | out |
| 3102 | Lithic scatter | Prehistoric | out |
| 3103 | Lithic Scatter | Prehistoric | out |
| 3104 | Lithic scatter | Prehistoric | out |
| 3105/H | Shell and Lithic Midden/Historic dump | Multi-component | out |
| 3106 | Shell and Lithic Midden | Prehistoric | out |
| 3164/H | Shell and lithic midden/historic glass scatter | Multi-component | out |
| 3165 | Shell Midden | Prehistoric | out |
| 3172 | Historic Kiln | Historic | out |
| 3189 | Historic Trash Scatter | Historic | out |
| 3230 | Historic oil pad and debris | Historic | out |
| 3231 | Historic oil facility | Historic | out |
| 3232 | Historic oil pad and debris | Historic | out |
| 3237 | Historic oil pad and debris | Historic | out |
| 3238 | Historic artifact scatter | Historic | out |
| 3239 | Historic well pad | Historic | out |
| 3241 | Historic oil well complex | Historic | out |
| 3246 | Historic trash and well rig hardware | Historic | out |
| 3247 | Historic Kilns | Historic | out |
| 3248 | Historic can scatter | Historic | out |
| 3252 | Historic trash scatter | Historic | out |
| 3252 | Historic trash scatter | Historic | out |
| 3253 | Historic artifact scatter | Historic | out |
| 3254 | Historic trash scatter | Historic | out |
| 3254 | Historic artifact scatter | Historic | out |
| 3255 | Lithic scatter | Prehistoric | out |

**Table 5.3-2**
**Previously Recorded Sites**

| Site Number | Site Type | Temporal Association | Within or Outside APE |
|---|---|---|---|
| 3356 | Historic trash scatter | Historic | in |
| 3397 | Shell and Lithic Midden | Prehistoric | out |
| 3564 | Artifact scatter | Prehistoric | out |
| 3860 | Historic Can and glass scatter | Historic | out |
| 3861 | Shell and Lithic Midden | Prehistoric | out |
| 3956 | Historic dump | Historic | out |
| 4014 | Shell and Lithic Midden | Prehistoric | out |
| 4853/5723 | Historic oil well | Historic | out |
| 4854H | Historic oil well | Historic | out |
| 4855H | Historic oil well | Historic | out |
| 4856H | Historic oil well | Historic | out |
| 4857H | Historic oil well | Historic | out |
| 4858H | Historic oil well | Historic | out |
| 4859H | Historic oil well | Historic | out |
| 4860H | Historic oil well | Historic | out |
| 4861H | Historic oil well | Historic | out |
| 4862H | Historic oil well | Historic | out |
| 4863H | Historic oil well | Historic | out |
| 4864H | Historic oil well | Historic | out |
| 4865H | Historic oil well | Historic | out |
| 4866H | Historic oil well | Historic | out |
| 4868H | Historic oil well | Historic | out |
| 4869H | Historic oil well | Historic | out |
| 4871H | Historic oil well | Historic | out |
| 4873H | Historic oil well | Historic | out |
| 5980 | Historic IF sherd | Historic | out |
| 5981 | Historic IF sherd | Historic | out |
| 5982 | Historic Agriculture Equipment | Historic | out |
| 6073 | Shell and Lithic Midden | Prehistoric | out |
| 6443 | Historic well pad | Historic | out |
| 6445 | Historic well pad | Historic | out |
| 6725/H | Lithic Scatter/glass Scatter | Multi-component | out |
| 6734 | Shell Midden | Prehistoric | out |
| 6735 | Shell Midden | Prehistoric | out |
| 6735 | IF-Groundstone | Prehistoric | out |
| 6736 | Shell Midden | Prehistoric | out |
| 6736 | Shell Midden | Prehistoric | out |
| 6737 | Shell Midden | Prehistoric | out |
| 6737 | Shell Midden | Prehistoric | out |
| 6738 | Shell and Lithic Midden | Prehistoric | out |
| 6739 | Shell and Lithic Midden | Prehistoric | out |
| 6740 | Shell Midden | Prehistoric | out |
| 6743 | Flake | Prehistoric | out |

**Table 5.3-2**
**Previously Recorded Sites**

| Site Number | Site Type | Temporal Association | Within or Outside APE |
|---|---|---|---|
| 6751 | Shell Midden | Prehistoric | out |
| 6759 | Shell Midden | Prehistoric | out |
| 6763 | Shell Midden | Prehistoric | out |
| 6764 | Shell Midden | Prehistoric | out |
| 6767 | Village Site | Prehistoric | in |
| 6768 | Shell Midden | Prehistoric | out |
| 6769 | Shell Midden | Prehistoric | out |
| 6774/H | Shell Midden and historic glass scatter | Multi-component | out |
| 6775 | Shell and Lithic Midden | Prehistoric | out |
| 6776 | Village Site | Prehistoric | in |
| 6780 | Shell Midden | Prehistoric | out |
| 7176 | IF Lithic Flakes | Prehistoric | in |
| 7177 | IF lithic flake | Prehistoric | out |
| 9314 | IF-Lithic Flake | Prehistoric | out |
| 9319 | IF-lithic flake | Prehistoric | out |
| 9319 | IF- Lithic Flake | Prehistoric | out |
| 9320 | IF-lithic flake and biface | Prehistoric | out |
| 9321 | IF-Obsidian Flake | Prehistoric | out |
| 9322 | IF-lithic flake | Prehistoric | out |
| 9326 | IF lithic flake | Prehistoric | Out |
| 9327 | IF lithic flake | Prehistoric | out |
| 9328 | IF lithic flake | Prehistoric | out |
| 9329 | IF lithic flake | Prehistoric | out |
| 9330 | IF lithic flake | Prehistoric | out |
| 9331 | IF lithic flake | Prehistoric | out |
| 9332 | IF lithic flake | Prehistoric | out |
| 9734 | Lithic scatter | Prehistoric | out |
| 9736 | Lithic scatter | Prehistoric | out |
| 9737 | Historic Steam Plant | Historic | in |
| 9738 | Historic Feed mill and ranch | Historic | in |
| 9813 | IF Lithic biface | Prehistoric | out |
| 9814 | IF-Lithic flake | Prehistoric | out |
| 9815 | IF-Lithic flake | Prehistoric | out |
| 9816 | IF-lithic flake | Prehistoric | out |
| 9827 | IF-pecked quartzite boulder | Prehistoric | out |
| 9828 | IF-lithic flake | Prehistoric | out |
| 10238 | IF lithic flake | Prehistoric | out |
| 10238 | IF-lithic flakes | Prehistoric | out |
| 10690 | Lithic scatter | Prehistoric | out |
| 10690 | Lithic Scatter | Prehistoric | out |
| 11369 | IF-Lithic core | Prehistoric | out |
| 11647 | IF lithic flake | Prehistoric | out |
| 11648 | IF lithic flake | Prehistoric | out |

**Table 5.3-2**
**Previously Recorded Sites**

| Site Number | Site Type | Temporal Association | Within or Outside APE |
|---|---|---|---|
| 11649 | IF Groundstone | Prehistoric | out |
| 12090 | Lithic scatter | Prehistoric | out |
| 12746 | Shell Midden | Prehistoric | out |
| 12747/H | Shell and lithic midden/abandoned oil well | Multi-component | out |
| 12748 | Lithic and groudstone scatter | Prehistoric | out |
| 12750 | IF-lithic flake | Prehistoric | out |

Source: HECA Project
Notes:
APE = area of potential effect
IF = isolated find

**Table 5.3-3**
**Previous Cultural Resource Inventories**

| Report Number | Title | Author | Affiliation | Date Submitted |
|---|---|---|---|---|
| KE-00135 | Negative Archaeological Survey Report | Osborne, Richard | Caltrans | April 1995 |
| KE-00141 | A Cultural Resources assessment and Plan for the Kern Water Bank Authority Project Near Bakersfield, Kern County, California | Fleagle, Dorothy, Catherine L. Pruett, and Peggy Murphy | Three Girls and a Shovel, LLC. | January 1997 |
| KE-00142 | A Cultural Resources Assessment and Plan for the Kern Water Bank Authority Project Near Bakersfield, Kern County, California Addendum I-Emergency Flood Area | Pruett, Catherine L., Peggy Murphy, and Dorothy Fleagle | Three Girls and a Shovel, LLC. | April 1997 |
| KE-00156 | Phase I Cultural Resources Assessment of 53 SOZ $SO_2$ Wells Eastern Elk Hills, Naval Petroleum Reserve No. 1 Well abandonment Project Kern County, California | Farmer, Constance | Department of Energy | April 1097 |
| KE-00189 | Gas Line Phillips Lab., Edwards AF 813 #91-110 | Wessel, Richard L. and Margaret R. Ronning | Computer Sciences Corporation Edwards Flight Test Center | November 1993 |
| KE-00207 | Archaeological Inventory Survey, Bakersfield-Taft Fiber optics Data Transmission Line, Kern County, California | Jensen, Peter PhD | Jensen & Associates | April 1997 |
| KE-00233 | Cultural Resource Assessment of a Surface Waste Dump Located South of Tupman in Section 25, Township 30S, Range 24E, MDBM, NPR-1 | Parr, Robert E. | Cultural Resource Facility, CSU Bakersfield | October 1997 |
| KE-00251 | Archaeological Resource Assessment of the Proposed 8.8 mile Gosford Intertie Pipeline Kern County, California; An Archaeological Report | Unknown | Ancient Enterprises, Inc | May 1979 |
| KE-00254 | An Archeological Inventory of Two Proposed PG&E Pipeline Corridor Segments: Newberry Springs to Hinkley 29.6 mi by 200 ft (717.6 AC), San Bernardino County, California and Arvin to Kern River 25.2 mi by 200 ft (610.9 AC), Kern County California. | Clay, Vickie and Larry Hause | Archaeological Research Services | November 1990 |
| KE-002667 | 06-KER-43 Negative Results Report | Gassner, Sarah | Department of Transportation | June 2002 |
| KE-00318 | Cultural Resources Evaluation of New Production Activity Locations at Elk Hills Naval Petroleum Reserve No. 1, Tupman, Kern County, California | Chavez, David | URS Research Company | December 1977 |

**Table 5.3-3**
**Previous Cultural Resource Inventories**

| Report Number | Title | Author | Affiliation | Date Submitted |
|---|---|---|---|---|
| KE-00320 | Cultural Resources Evaluation for the Naval Petroleum Reserve No. 1 (Elk Hills) to Rialto Crude Oil Pipeline, Kern County, California | Chavez, David | URS Company | December 1978 |
| KE-003401 | Rehabilitation on Old River Road from SR 119 (Taft Highway) South to Interstate 5, near Bakersfield, Kern County, California | Romani, John | Compass Rose Archaeological, Inc. | November 2006 |
| KE-00358 | Archaeological Survey of Section 12, Township 32S, Range 38E, a 640 Acre Parcel near California City, California | Cunkelman, Sarah and John Murray | Cultural Resource Facility, CSU Bakersfield | October 1990 |
| KE-00359 | Historical Resources Evaluation and Assessment Report of Western Naval Petroleum Reserve No. 1, Elk Hills, Kern County, California. Final Report | Hamusek-McGann, Blossom, Cindy L Baker, and Mary L. Maniery | Par Environmental Services, Inc. | September 1997 |
| KE-00360 | National Register of Historic Places Eligibility Evaluation of Archaeological Sites CA-KER-3079, CA-KER-3080, CA-KER-3082, and CA-KER-3085/H, Naval Petroleum Reserve No. 1, Elk Hills, Kern County, California | Jackson, Thomas L, Ph.D. | Pacific Legacy, Inc. | August 1997 |
| KE-00403 | West Coast Cogeneration Project: Belridge | Fredrickson, David A, PhD | Sonoma State University Academic Foundation, Inc. | November 1985 |
| KE-00419 | Archaeological Assessment of Three Proposed Powerline Routes on the Elk Hills Naval Petroleum Reserve No. 1 Near Taft, Kern County, California | Garcia, Juanita | Cultural Resource Facility, CSU Bakersfield | March 1998 |
| KE-00513 | Archaeological Assessments for Two Pipeline Corridors, City of Tupman, Kern County, California | Jackson, Scott | Cultural Resource Facility, CSU Bakersfield | March 1990 |
| KE-00561 | Cultural Resources Technical Report No. 8 | King, Chester and Stephen Craig | Arthur D. Little, Inc | January 1977 |
| KE-00578 | Archaeological Survey Report for the Proposed Buena Vista Slough Bridge Replacement 06-KER-58 P.M. 24.01 Bridge 50-03 06200-225500 | Levulett, Valerie | Department of Transportation | June 1982 |
| KE-00657 | Negative Archaeological Survey Report - Widening and Shoulder Paving, Additional 25 Feet of ROW of Highway 58, Kern County, California | McManus, J. and Terry Schuster | Department of Transportation | January 1986 |

**Table 5.3-3**
**Previous Cultural Resource Inventories**

| Report Number | Title | Author | Affiliation | Date Submitted |
|---|---|---|---|---|
| KE-00714 | Negative Archeology Report | Noble, Daryl | Caltrans | May 1987 |
| KE-00793 | Archaeological Inventory and assessment of the Proposed Pacificana Project, Kern County, California | Osbourne, Richard H. and Mark Sutton | Cultural Resource Facility, CSU Bakersfield | August 1993 |
| KE-00809 | An Archaeological Assessment of 178 acres of Land, South of Buttonwillow, Kern County, California | Parr, Robert E. | CSU Bakersfield | November 1989 |
| KE-00857 | An Archaeological Assessment of a Chevron Overhead Distribution Line Project, McKittrick Valley, Kern County, California | Parr, Robert E. | CSU Bakersfield | November 1994 |
| KE-00859 | An Archaeological Assessment of the City of Bakersfield Wastewater Master Plan, Kern County, California | Parr, Robert E. | Cultural Resource Facility, CSU Bakersfield | July 1994 |
| KE-00919 | An Archaeological Assessment of the Arco Pipeline Company Lines #2 and #50 Pipeline Replacement Projects, Southwestern Kern County, California | Parr, Robert E. | Cultural Resource Facility, CSU Bakersfield | November 1997 |
| KE-00922 | An Archaeological Survey of the Crocker Canyon Seismic Line, Kern and San Luis Obispo Counties | Pruett, Catherine L. | CSU Bakersfield | June 1989 |
| KE-00924 | Cultural Resource Assessment of Sample Areas of Naval Petroleum Reserve No. 1 Kern County, California | Unknown | Peak & Associates, Inc. | September 1991 |
| KE-00924 | Cultural Resource Assessment of Sample Areas of Naval Petroleum Reserve No. 1, Kern County, California | Peak & Associates, Inc. | EG&G Energy Measurements, Inc. | September 1991 |
| KE-00977 | Archaeological Reconnaissance Report for Continental Telephone Randsburg Buried Telephone Cable | Ridgway, Nancy B. and Alan P. Garfinkel | Unknown | April 1984 |
| KE-00986 | Historic Architectural Survey Report for a Left Turn Channelization at the Intersection of State Route 119 and Buena Vista Road West of Old River, Kern County | Fisher, Jim | California department of Transportation | February 1994 |
| KE-01011 | Negative Archaeological Report Highway Project | Laylander, Don | Caltrans | May 1999 |
| KE-01023 | Preliminary Archaeological Resources Evaluation for Buena Vista Bakersfield, California | Unknown | The Planning Center | September 1996 |
| KE-01047 | Archaeological Report On Tec Section Site | Schiffman, Robert | Department of Anthropology, Bakersfield College | January 1976 |

**Table 5.3-3**
**Previous Cultural Resource Inventories**

| Report Number | Title | Author | Affiliation | Date Submitted |
|---|---|---|---|---|
| KE-01067 | Archaeological Investigation of the 1979 Systems Improvement Project for the Kern Delta Water District | Schiffman, Robert | Department of Anthropology, Bakersfield College | December 1979 |
| KE-01067 | Archaeological Investigation of the 1979 Systems Improvement Project for the Kern Delta Water District | Schiffman, Robert A. | Boyle Engineering | December 1979 |
| KE-01301 | Archaeological Evaluation of Celeron Gathering Corporation's 6 Inch Crude Oil Pipeline, Kern County, California | Schiffman, Robert A. | Bakersfield College | July 1988 |
| KE-01358 | Archaeological Investigation for Southern California Gas Company's Pipeline #73.90 Removal | Schiffman, Robert A. | Bakersfield College | April 1990 |
| KE-01485 | Archaeological Evaluation for the Proposed Belridge Field Cogeneration Plant Kern County, California | Schiffman, Robert A. and Nyle Monday | Unknown | October 1982 |
| KE-01634 | Negative Archaeological Survey Report | Swenson, Laurie | Caltrans | September 1980 |
| KE-01732 | An Archaeological Assessment of the Proposed Kern High School Campus #3 South of Bakersfield, Kern County, California | Valdez, Sharynn-Marie | Quad Consultants | November 1991 |
| KE-01811 | Hunter-gatherer Adaptive Strategies and Lacustrine Environments in the Buena Vista Lake Basin, Kern County, California | Hartzell, Leslie Loise | PhD Dissertation University of California, Davis | May 1992 |
| KE-01813 | Supplemental Report Cultural Resources Inventory South Belridge Cogeneration Project Application for Certification | Unknown | Woodward-Clyde | December 1985 |
| KE-01822 | An Historical Assessment of the 3G Gas Plant, Naval Petroleum Reserve No. 1, Elk Hills, Kern County, California | Yohe, Robert M. | Cultural Resource Facility, CSU Bakersfield | April 1991 |
| KE-01877 | Archaeological Testing at CA-KER-3397, Northeast of Dustin Acres, Kern County, California | Osborne, Richard | Cultural Resource Facility, CSU Bakersfield | August 1993 |
| KE-01892 | Report on Archaeological Testing of Twelve Sites On Naval Petroleum Reserve No. 1 Kern County, California | Gerry, Robert A | Peak & Associates, Inc. | May 1992 |
| KE-01986 | Results of Archaeological Records Review for the Pacific Pipeline Project Emidio Lateral Pipeline Kern and Los Angles Counties | Gibson, Robert O. | Unknown | November 1993 |

**Table 5.3-3**
**Previous Cultural Resource Inventories**

| Report Number | Title | Author | Affiliation | Date Submitted |
|---|---|---|---|---|
| KE-01998 | Archaeological Investigation for Southern California Gas Company's Pipeline #85 Replacement, Kern County, California | Schiffman, Robert A. | Bakersfield College | August 1989 |
| KE-02010 | Archaeological Inventory of the Chevron/Santa Fe Midway Valley 3D Seismic Survey Project, Kern and San Luis Obispo Counties, California | Alcock, Gwen and Robert E. Parr | Cultural Resource Facility, CSU Bakersfield | April 1998 |
| KE-02015 | Tule Elk State Reserve Cultural Resource Survey | Reinoehl, Gary | Department of Parks and Recreation | November 1991 |
| KE-02015 | Tule Elk State Reserve Cultural Resource Survey | Reinoehl, Gary | California Department of Parks and Recreation | November 1991 |
| KE-02030 | A Cultural Resources Assessment for the Allen Road and Buena Vista Trunk Sewer Line, Public Works Department, City of Bakersfield, Kern County, California | Fleagle, Dorothy, Catherine L. Pruett, and Peggy Murphy | Three Girls and a Shovel, LLC. | April 1998 |
| KE-02122 | Archaeological Investigation for Canyon Hills Assembly of God Site Plan Review #P97-0824, Kern County, California | Schiffman, Robert A. | Unknown | January 1998 |
| KE-02133 | An Archaeological Assessment for a Proposed Nineteen Mile Tosco Refining Company Oil Pipeline, McKittrick, Kern County, California | Murphy, Peggy and Catherine L. Pruett | Three Girls and a Shovel, LLC. | May 1998 |
| KE-02162 | Cultural Resources Technical Report for the La Paloma Generating Project | Hatoff, Brian W. | Woodward-Clyde | September 1998 |
| KE-02162 | Cultural Resources Technical Report for the La Paloma Generating Project | Hatoff, Brian W. | URS Greiner Woodward-Clyde | September 1998 |
| KE-02268 | Prehistoric Archaeological Resources Inventory and Evaluation at Naval Petroleum Reserve No. 1 (Elk Hills), Kern County, California | Jackson, Thomas L, Ph.D. and Lisa Jackson, M.A. | Pacific Legacy, Inc. | November 1998 |
| KE-02269 | Prehistoric Archaeological Extended Inventory Research at Naval Petroleum Reserve No. 1 (Elk Hills), Kern County, California | Jackson, Thomas L., Lisa Shapiro, and Jerome King | Pacific Legacy, Inc. | September 1997 |
| KE-02271 | Cultural Resources Technical Report for the La Paloma Generating Project Supplement #2 to Appendix L | Hatoff, Brian W. | URS Greiner Woodward-Clyde | March 1999 |

**Table 5.3-3**
**Previous Cultural Resource Inventories**

| Report Number | Title | Author | Affiliation | Date Submitted |
|---|---|---|---|---|
| KE-02278 | Cultural Resources Inventory Report for Williams Communication, Inc. Fiber Optic Cable System Installation Project San Luis Obispo to Bakersfield | Avina, Mike A. | Jones and Stokes, Inc. | October 1999 |
| KE-02311 | A Cultural Resources Assessment for New Berms in Sections 19, 20, 21, and 22, Township 30S, Range 25E, Kern County, California | Pruett, Catherine L. | Three Girls and a Shovel, LLC. | July 1999 |
| KE-02322 | An Archaeological Assessment of Bureau of Land Management Acreage Included in the Occidental of Elk Hills, Inc. 3D Seismic Survey in the Elk Hills/Buena Vista Valley Area, Kern County, California | Murphy, Peggy B. | Three Girls and a Shovel, LLC. | January 2000 |
| KE-02350 | La Paloma Generating Project Cultural Resources, Technical Report Addendum 3 | Hatoff, Brian W. | URS Greiner Woodward-Clyde | July 2000 |
| KE-02376 | Geologic History of Site CA-Ker-3080 | Weber, Gerald | Pacific Legacy, Inc. | August 1999 |
| KE-02377 | Cultural Resources Assessment at the Kern River-California Aqueduct Intertie Kern County, California | Deitz, Frank | U.S. Army Corps of Engineers | July 1999 |
| KE-02391 | Cultural Resources Inventory for the Proposed Texaco Sunrise Cogeneration and Power Project: Addendum for Route B and Valley Acres Substation Surveys | Jackson, Thomas L. PhD and William A. Shapiro | Pacific Legacy, Inc. | May 1999 |
| KE-02452 | Western Midway Sunset Cogeneration Company Project | Unknown | WZI Inc | February 2000 |
| KE-02527 | Archaeological Survey for the CALPEAK #3, Midway Kern County, California | Jones, Donna | Latham and Watkins | May 2001 |
| KE-02536 | A Phase I Cultural Resource Survey For Bill Gammin, Kern County, California | Hudlow, Scott | Hudlow Cultural Research Associates | March 2001 |
| KE-02559 | La Paloma Generating Project Cultural Resources, Technical Report Addendum 2, Appendix L | Hatoff, Brian W. | URS Greiner Woodward-Clyde | January 2000 |
| KE-02560 | La Paloma Generating Project Cultural Resources, Technical Report (Appendix L) | Hatoff, Brian W. | Woodward-Clyde | July 1998 |
| KE-02561 | La Paloma Generating Project Preliminary and Final Cultural Resources Report (Condition of Certification CUL-13) | Unknown | URS | August 2001 |

**Table 5.3-3**
**Previous Cultural Resource Inventories**

| Report Number | Title | Author | Affiliation | Date Submitted |
|---|---|---|---|---|
| KE-02561 | La Paloma Generating Project Preliminary and Final Cultural Resources Report (Condition of Certification CUL-13) | Unknown | URS | August 2001 |
| KE-02581 | Cultural Resources Inventory, Evaluation, and Mitigation Plan for the Water Supply Line (Route 2), Elk Hills Power Project (99-AFC-1): Addendum to the Elk Hills Power Project Cultural Resources Monitoring and Mitigation Plan, Kern County, California | Culleton, Brenden and Thomas Jackson | Pacific Legacy, Inc. | November 2001 |
| KE-02622 | Cultural Resources Survey for the Kern Delta District Water Banking Project | McDougall, Dennis P. | Applied Earth Works, Inc. | July 2001 |
| KE-02717 | Cultural Resources Inventory, Evaluation, and Mitigation Plan for the Transmission Line (Route 1B), Elk Hills Power Project (99-AFC-1): Addendum to the Elk Hills Power Project Cultural Resources Monitoring and Mitigation Plan, Kern County, California | Culleton, Brenden and Thomas Jackson | Pacific Legacy, Inc. | July 2002 |
| KE-02747 | FERC #001219A-Installation of La Paloma Meter Station and Lateral Pipeline in Kern County, California | Moore, Amy | El Paso Natural Gas/Pipelines West | January 2008 |
| KE-02772 | Archaeological Investigation for the Woodward Homes Project, Kern County, California | Schiffman, Robert A. | Unknown | January 2003 |
| KE-02854 | Archaeological Investigation of the Energy Works Buttonwillow Project Kern County, California | Christy, Juliet L. | Greenwood and Associates | November 2001 |
| KE-02868 | Cultural Resources Inventory and Evaluation for the Nuevo Natural Gas Pipeline | Culleton, Brenden and Thomas Jackson | Pacific Legacy, Inc. | January 2004 |
| KE-02875 | Cultural Resources Assessment for Gosford-Panama Partners, A 285 Acre Parcel Located in Southwest Bakersfield, Kern County, California | Lewis Pruett, Catherine and Pattrice Jeppson | Three Girls and a Shovel, LLC. | February 2004 |
| KE-02876 | Cultural Resources Assessment for 80 Acres, Old River Estates, Located South of Panama Lane and East of Old River Road, Bakersfield, Kern County, California | Lewis Pruett, Catherine | Three Girls and a Shovel, LLC. | January 2004 |
| KE-02885 | Archaeological Testing Report for the Restroom Replacement Project at Tule Elk State Reserve | Mealy, Marla M. | California State Parks | April 2004 |

**Table 5.3-3**
**Previous Cultural Resource Inventories**

| Report Number | Title | Author | Affiliation | Date Submitted |
|---|---|---|---|---|
| KE-02892 | A Phase I Cultural Resources Assessment for 89 Acres Located South of Panama Lane and East of Buena Vista Road in Southwest Bakersfield, Kern County, California | Murphy, Peggy B. | Three Girls and a Shovel, LLC. | April 2004 |
| KE-02948 | A Cultural Resources Assessment of 290 Acres of land on the Borba Ranch Property Kern County, California. | Williams, Audry | Center for Archaeological Research, CSU Bakersfield | November 2004 |
| KE-02966 | Cultural Resources Assessment for 75.4 Acres Located in Southwest Bakersfield, Kern County, California | Lewis Pruett, Catherine | Three Girls and a Shovel, LLC. | October 2004 |
| KE-02970 | Cultural Resources Assessment for 1,260 Acres, Located in Southwest Bakersfield, Kern County, California | Murphy, Peggy and Catherine L. Pruett | Three Girls and a Shovel, LLC. | August 2004 |
| KE-02993 | Cultural Resource Survey for A 79-Acres Parcel, North of Taft Highway (119) Between Gosford Road and Progress Road In Southwest Bakersfield, Kern County, California. | Schiffman, Robert and Alan P. Gold | Archaeological Associates of Kern County | December 2004 |
| KE-02997 | Cultural Resources Survey for Tract No. 6332, A 77 Acre Parcel, South of McCutchen Road and East of Ashe Road South of Bakersfield Near Panama, Kern County, California | Schiffman, Robert A. and Alan P. Gold | Archaeological Associates of Kern County | December 2004 |
| KE-03006 | A Phase I Cultural Resource Survey for Centex Homes Taft Highway Project, City of Bakersfield, California | Hudlow, Scott | Hudlow Cultural Research Associates | December 2004 |
| KE-03044 | Cultural Resource Survey for a 42.89-Acre Parcel Between Panama Lane and McCutchen Road in Southwest Bakersfield, Kern County, California | Schiffman, Robert A. and Alan P. Gold | Archaeological Associates of Kern County | December 2004 |
| KE-03045 | Final Cultural Resources Report for the Sunrise Power Project Phase I | Jackson, Thomas L. PhD and Brendan Culleton | Pacific Legacy, Inc. | April 2003 |
| KE-03084 | A Cultural Resources Assessment for Old River Ranch, Located in Southwest Bakersfield, Kern County, California | Pruett, Catherine L. and Peggy Murphy | Three Girls and a Shovel, LLC. | March 2005 |
| KE-03123 | Cultural Resource survey for a 95.65-Acre Parcel on the North Side of McCutchen Road and the East Side of Gosford Road, Southwest Bakersfield, Kern County, California | Schiffman, Robert A. and Alan P. Gold | Archaeological Associates of Kern County | January 2005 |
| KE-03126 | Cultural Resource Survey for A 79-Acres Parcel, North of Taft Highway (119) and West of Gosford Road In Bakersfield, Kern County, California. | Schiffman, Robert and Alan P. Gold | Archaeological Associates of Kern County | July 2005 |

**Table 5.3-3**
**Previous Cultural Resource Inventories**

| Report Number | Title | Author | Affiliation | Date Submitted |
|---|---|---|---|---|
| KE-03204 | Rehabilitation on Ashe Road from SR 119 North to the City Limits Line, Bakersfield, Kern County, California | Romani, John | Compass Rose Archaeological, Inc. | March 2006 |
| KE-03254 | A Phase I Cultural Resource Survey for a Residential Project at Taft Highway and Gosford Road, City of Bakersfield, California. | Hudlow, Scott | Hudlow Cultural Research Associates | August 2006 |
| KE-03293 | A Phase I Cultural Resource Survey for Steve Antongiovani Annexation/General Plan Amendment/Zone Change, City of Bakersfield, California | Hudlow, Scott | Hudlow Cultural Research Associates | April 2006 |
| KE-03316 | A Phase I Cultural Resource Survey John Bianchi, Taft Highway and Buena Vista Road, City of Bakersfield, California | Hudlow, Scott | Hudlow Cultural Research Associates | April 2006 |
| KE-03327 | Occidental Hills | Billat, Lorna | Earth Touch | June 2006 |
| KE-03353 | A Cultural Resources Assessment for 700 Acres (Phase 1B) Located South of Taft Highway at Interstate 5, Borba Dairy Project, Kern County, California | Orfila, Rebecca S. and Jill K. Gardner | Center of Archaeological Research, CSU Bakersfield | July 2006 |
| KE-03354 | A Cultural Resources Assessment for 700 Acres (Phase 1C) Located South of Taft Highway at Interstate 5, Borba Dairy Project, Kern County, California | Orfila, Rebecca S. and Jill K. Gardner | Center of Archaeological Research, CSU Bakersfield | July 2006 |
| KE-03355 | A Cultural Resources Assessment for 700 Acres (Phase 1A) Located South of Taft Highway at Interstate 5, Borba Dairy Project, Kern County, California | Orfila, Rebecca S. and Jill K. Gardner | Center of Archaeological Research, CSU Bakersfield | July 2006 |
| KE-03429 | A Phase I Cultural Resource Survey for Montecito Properties, City of Bakersfield, California | Hudlow, Scott | Hudlow Cultural Research Associates | August 2006 |
| KE-03503 | Prehistoric Archaeological Resources Inventory and Evaluation at Naval Petroleum Reserve No. 1 (Elk Hills), Kern County, California | Shapiro, Lisa | Pacific Legacy, Inc. | August 1999 |
| KE-03508 | Cultural Resources Management Plan Naval Petroleum Reserve No. 1 Elk Hills, Kern County, California | Jackson, Thomas L, Ph.D. and Lisa Jackson, M.A. | Pacific Legacy, Inc. | December 1997 |
| KE-03508 | Cultural Resources Management Plan Naval Petroleum Reserve No. 1 Elk Hills, Kern County, California | Jackson, Thomas L. PhD and Lisa Shapiro | Pacific Legacy, Inc. | December 1997 |

**Table 5.3-3**
**Previous Cultural Resource Inventories**

| Report Number | Title | Author | Affiliation | Date Submitted |
|---|---|---|---|---|
| KE-03509 | Historical Resources Evaluation and Assessment Report of Western Naval Petroleum Reserve No. 1, Elk Hills, Kern County, California | Hamusek-McGann, Blossom, Cindy L Baker, and Mary L. Maniery | Par Environmental Services, Inc. | September 1997 |
| KE-112 | A Phase I Cultural Resource Survey for a Proposed Concrete Batch Plant, Kern County, California | Hudlow, Scott | Hudlow Cultural Research Associates | May 1997 |
| KE-2375 | Prehistoric Archaeological Resources Inventory and Evaluation at Naval Petroleum Reserve No. 1 (Elk Hills), Kern County, California | Jackson, Thomas L., Lisa Shapiro, and Jerome King | Pacific Legacy, Inc. | November 1999 |
| KE-650 | Archaeological Survey Report for Proposed widening Project 06-KER-119 P.M. 14.9/19.8 | McManus, J. | Department of Transportation | January 1985 |

Source: HECA Project
Notes:

| | | |
|---|---|---|
| S | = | south |
| E | = | east |
| NPR | = | Naval Petroleum Reserve |
| mi | = | miles |
| ft | = | feet |
| AC | = | acre |
| PG&E | = | Pacific Gas and Electric |
| SR | = | State Route |
| CSU | = | California State University |
| ROW | = | right-of-way |
| 3D | = | three-dimensional |

### *5.3.1.8 Archaeological Survey*

Due to access and other survey limitations, the Project area was inventoried in four separate sessions. The Project Site and its surrounding 200 foot survey buffer were completed in 2 March to 7 March 2008 and 28 June to 30 June 2008. The linear resources were surveyed over several sessions including 7 April to 11 April 2008, 16 May to 22 May 2008, and 28 June to 30 June 2008.

Disturbances within the entire Project APE included abundant animal burrows; agricultural plowing, leveling, and construction; irrigation canal construction and maintenance; livestock grazing; heavy equipment and vehicle disturbances; wildfires; road construction and maintenance; and oil and gas infrastructure development. Ground visibility in the Project area ranged between 50 and 100 percent, with the vast majority of the APE being clear of vegetation and other debris. Some of the linear facilities crossed currently-active agricultural fields.

The URS archaeologists recorded a total of 20 newly recorded archaeological sites and updated a total of 6 previously recorded archaeological sites. These sites are summarized in Table 5.3-4, Newly Recorded Sites, and Table 5.3-5, Updated Previously Recorded Sites Within the APE.

### *5.3.1.9 Previously Unrecorded Cultural Sites*

The following section describes in detail the new sites encountered by the URS archaeologists during the fieldwork of the Project APE. HECA-1 is not included here because further investigation revealed that it is part of previously recorded Site P15-003077.

**HECA- 2**

Site HECA- 2 is a prehistoric artifact and shell scatter located within the Project Site. The site is located on a low, deflated, north-trending terrace ridge slope. The site is on a gentle slope of less then 5 degrees and rolls gently into an ephemeral stream running southwest to northeast that was altered to accommodate previous agricultural use. The site crosses this drainage and re-emerges at the edge road that runs south to north along the western boundary of the site. The site soil is a heavily impacted, loosely compacted silty sand with abundant limestone and sandstone pebble inclusions. Due to decades of agricultural plowing, sheep and cattle herding, and heavy equipment disturbances, the site has been denudated of the dominant vegetation. Low grasses and other ruderal plant species dominate but are very sparse.

Site HECA-2 is a prehistoric artifact scatter. It consists of a moderate density artifact scatter containing Monterey chert flakes and debitage, an obsidian stemmed biface fragment, a groundstone bowl fragment, 2 sandstone metate fragments, a sandstone mano, and a single piece of heat discolored mud-daub. A total of 7 grey and brown Monterey chert flakes were recorded on the surface of the site. These flakes represent mainly late stages of core reduction and early tool production. The obsidian biface is stemmed and eared with moderate thinning on both faces. The biface appears to have lost its tip from a snap fracture. The margins of the tool are heavily worn and display some use wear but very little retouch. The biface measures 36 by 28 by 6 millimeters (mm). The groundstone bowl is made from sandstone and exhibits a smoothed and polished rounded shape with a smooth flat base and a concave bowl that measures 9 by 15 centimeters (cm) across and 4.5 cm deep. The entire bowl fragment measures 25 by 15 by 7.6 cm.

**Table 5.3-4**
**Newly Recorded Sites**

| Site Number | General Location in APE | Description | Association | CRHR Eligibility | Recommendation |
|---|---|---|---|---|---|
| HECA-2 | Project Site | Artifact and Shell scatter | Prehistoric | Eligible | Test for integrity and CRHR eligibility |
| HECA-3 | Project Site | Village site | Prehistoric | Eligible | Test for integrity and CRHR eligibility |
| HECA-4 | Project Site | Shell and lithic scatter | Prehistoric | Not Eligible | No further work is recommended. |
| HECA-5 | Project Site | Shell and lithic scatter | Prehistoric | Not Eligible | No further work is recommended |
| HECA-6 | Project Site | Shell and lithic scatter | Prehistoric | Not Eligible | No further work is recommended |
| HECA-7 | Project Site | Artifact scatter/Village | Prehistoric | Eligible | Test for integrity and CRHR eligibility |
| HECA-8 | Project Site | Shell and lithic scatter | Prehistoric | Not Eligible | No further work is recommended |
| HECA-10 | Project Site | Lithic Scatter | Prehistoric | Not Eligible | No further work is recommended. |
| HECA-11 | Project Site | Artifact Scatter/Burial | Prehistoric | Eligible | Test for integrity and CRHR eligibility |
| HECA-12 | Project Site | Artifact and Shell scatter | Prehistoric | Eligible | Test for integrity and CRHR eligibility |
| JM-HECA-1H | Linear | Culvert | Historic | Not Eligible | No further work is recommended. |
| KRM-001H | Linear | Ditch Segment | Historic | Not Eligible | No further work is recommended. |
| KRM-010H | Linear | Road Segment | Historic | Not Eligible | No further work is recommended. |
| SMG001H | Linear | Can Dump | Historic | Not Eligible | No further work is recommended. |
| SMG002H | Linear | Can Dump | Historic | Not Eligible | No further work is recommended. |
| JM-BVWD-1 | Linear | Lithic Scatter | Prehistoric | Eligible | Monitor construction |
| JM-BVWD-2 | Linear | Canal Segment | Historic | Eligible | Monitor construction |
| BS-BVWD-3 | Linear | Historic Structure | Historic | Not Eligible | No further work is recommended. |
| HECA-BUF-1 | Project Site buffer | Can Dump | Historic | Not Eligible | No further work is recommended. |
| HECA-BUF-2 | Project Site buffer | Abandoned Well Site | Historic | Not Eligible | No further work is recommended. |

Source: HECA Project.
Notes:
APE = area of potential effect
CB = Construction Battalion
CRHR = California Register of Historical Places

**Table 5.3-5**
**Updated Previously Recorded Sites Within the APE**

| Site Number | General Location in APE | Description | Association | CRHR Eligibility | Recommendation |
|---|---|---|---|---|---|
| P15-002464 | Linear | Artifact Scatter | Prehistoric | Not Eligible | No further work |
| P15-003077/H | Project Site and buffer | Artifact Scatter/CB trenches | Prehistoric/ Historic | Potentially Eligible | Test northern extent of site within the Project Site APE for integrity and CRHR eligibility. |
| P15-006771/H | Project Site buffer | Artifact scatter/CB trenches | Prehistoric/ Historic | Not Eligible | No further work |
| P15-006767 | Linear | Artifact Scatter | Prehistoric | Not Eligible | No further work |
| P15-006776 | Project Site | Village Site | Prehistoric | Potentially Eligible | Test for integrity and CRHR eligibility |
| P15-009738 | Linear | Stock Yard | Prehistoric | Not Eligible | No further work |

Source: HECA Project.
Notes:
APE = area of potential effect
CB = Construction Battalion
CRHR = California Register of Historical Places

The 2 sandstone metate fragments represent separate artifacts. Each has a smoothed grinding surface that shows evidence of long term use as most ground areas are approximately 4 cm deep and exhibit bi-directional grinding. The sandstone mano is a small one-handed mano with a single well worn use surface. The mano shows evidence of very intense shaping pecks along the edges of the artifact. The mano measures 11 by 5.5 by 4 cm. The single piece of fire hardened daub was located on the surface and measures 3.2 by 2.5 by 1.7 cm. The piece is generally gray in color with an oxidized brown and reddish area indicative of direct contact with fire. The daub has clear impressions of plant material in its surface suggesting that it was a wall or roof fragment of a traditional Yokuts structure destroyed by fire.

The site surface is badly eroded and heavily impacted by agricultural impacts. The sites surface remains suggest that the site was a seasonal village or other longer term habitation site. This suggests that the site has the potential to contain more intact subsurface remains that may hold information important to the prehistory of the area and the state.

**HECA-3**

Site HECA-3 is a prehistoric artifact scatter and shell midden with a potential house pit depression located in the Project Site. The site is located on a broad relatively flat north-trending terrace ridge bound on its eastern boundary by an intermittent drainage that separates this site from the terrace ridge site HECA-2 is located on. This site is on a gentle northern aspect slope of less then 2 degrees. The site soil is heavily impacted, loosely compacted, silty sand with abundant limestone and sandstone pebble inclusions. Due to decades of agricultural plowing, sheep and cattle herding, and heavy equipment disturbances, the site has been nearly denudated of the dominant vegetation. A small stand of salt bush persists along the southern boundary of the site but these are the only large plants in the area. Low grasses and other ruderal plant species dominate but are very sparse.

The artifact assemblage of the site consists of 31 pieces of lithic debitage, 6 pieces of groundstone, 2 exhausted cores, a stemmed Monterey chert projectile point, a basalt lithic drill, an obsidian biface fragment, a single *Protothaca* marine shell, and several heavy concentrations of freshwater mussel shell. The lithic debitage consists of flakes of all stages of reduction and shatter composed of Monterey chert, Franciscan chert, basalt, and obsidian. The groundstone artifacts are composed of sandstone and consist of 2 metate fragments, 1 complete groundstone mortar, 1 bowl fragment, and a groundstone pestle. The 2 metate fragments are relatively small and show evidence of being used on one surface for bi-directional grinding. The 2 artifacts measure 14 by 10 by 3.5 cm and 10 by 10 by 5 cm. The groundstone mortar is composed of a single sandstone rough-shaped sandstone cobble with a 1.5 cm deep bowl area. The mortar measures 18 by 15 by 9.5 cm. The bowl fragment is approximately 3 cm thick with a smooth ground interior surface and a pecked and ground exterior surface. The pestle is pecked on all surfaces and exhibits two rounded surfaces on either end of the artifact. The pestle measures 12.5 by 5 by 4.7 cm. The Monterey chert projectile point is a stemmed point with uneven open shoulders and a general leaf shape. The point has original flake surface and cortex present on both faces suggesting that the point was manufactured from a tabular chert nodule common to the area. The point exhibits thinning and edge shaping flakes on both faces. Some retouch is present along the tip of the artifact. The point measures 50 by 29 by 6 mm. The basalt drill is a bifacially thinned flaked with heavy twisting wear at the tip of tool. The drill measures 40 by 10 by 3 mm. The two exhausted cores are composed of Monterey chert and measure 30 by 27 by 21 mm and 25 by 25 by 20 mm. The *Protothaca* shell is of marine origin and was collected

prehistorically from the California Pacific Coast. The shell is broken near its base which is a circular break suggesting the artifact was possibly a bead and broke at the perforation. The shell midden associated with this site has pockets of very dense concentrations of shell that number 10 to 20 per square meter (sq m). Elsewhere the concentrations are much more sparse with counts of 2 to 3 per sq m.

The possible house pit depression is located along the edge of the drainage slope and has been slightly impacted by livestock trampling and alluvial runoff. The depression still holds its circular shape and was likely revealed by agricultural plowing.

Site HECA-3 is an extensive prehistoric site that has retained a large portion of its integrity despite the impacts to its surface. The sites artifact assemblage is relatively intact and when combined with the possible house pit depression this site appears to be a well-defined prehistoric habitation and resource processing location. The site has the potential to contain significant intact subsurface cultural contexts that may contain information important to the prehistory of the area and state.

**HECA-4**

Site HECA-4 is a small prehistoric shell and lithic scatter located within the Project Site. The site is located on a broad, flat, deflated, and eroded terrace with a generally northern aspect with a slope of less then 2 degrees. The site overlooks the northern edge of the Elk Hills including the Tule Elk Reserve and the agricultural lands south of Buttonwillow, which is visible to the north. The site soil is a loosely compacted, tan to grey, silty sand with abundant limestone and sandstone angular and sub-angular inclusions. Due to decades of agricultural plowing, sheep and cattle herding, and heavy equipment disturbances, the site has been denudated of the dominant vegetation. Low grasses and other ruderal plant species dominate but are very sparse.

Site HECA-4 is a small site consisting of a sparse shell scatter and four lithic flakes. The shell scatter is composed of freshwater mussel shell that is the remnant of the mollusk being harvested and used as a food staple. The mussels were likely collected from the Buena Vista Slough that was located at the northern and eastern edge of the Elk Hills and transported to this site for processing. The mussel shell present on the site surface is relatively sparse with a concentration of 1 shell per sq m. The four flakes are comprised of red to brown Monterey chert flakes that represent early stage core reduction. The assemblage suggests the site was a limited use area with only short term resource processing activities.

The site has been heavily impacted by agricultural activity and alluvial sheetwash erosion. Due to these impacts and the limited surface artifact assemblage it is unlikely the site contains any further significant sub-surface remains that may be important to the prehistory of the area or the state.

**HECA-5**

Site HECA-5 is a moderate density, prehistoric, shell and lithic scatter located within the Project Site. The site is located on a broad, flat, terrace with an open aspect and a gentle northern slope of less than 2 degrees. The site overlooks the northern edge of the Elk Hills including the Tule Elk Reserve and the agricultural lands south of Buttonwillow, which is visible to the north. The site soil is a loosely compacted, tan to grey, silty sand with abundant limestone and sandstone angular and sub-angular inclusions. Due to decades of agricultural plowing, sheep and cattle

herding, and heavy equipment disturbances, the site has been denudated of the dominant vegetation. Low grasses and other ruderal plant species dominate but are very sparse.

The artifact assemblage of this site is very limited consisting of five brown, grey and white, Monterey chert flakes and shatter, a large Monterey chert projectile point, and a moderate density fresh water mussel shell midden. The five lithic flakes and shatter are associated with early and late stage core reduction and are evenly scattered across the site surface. The projectile point is composed of dark brown Monterey chert and is bifacially thinned on both faces. Small areas of patina have developed on both faces of the point. The point exhibits an elongated triangular shape with two rounded shoulders near the base. The hafting element of the point appears to have been a stemmed base that snapped off at the neck of the tool. The point shows only minor retouch and use wear along the blade element. The projectile point is most likely a Gypsum period dart point that dates to 4,000 to 1950 B.P. The projectile point measures 75 by 32 by 10 mm. The shell midden on the site surface is of moderate density and numbers about 2 to 5 per sq m.

Site HECA-5 is a heavily disturbed site that has been impacted by decades of agricultural activity. The presence of the diagnostic projectile point suggests a very old occupation period of the site. However, due to the impacts the site has undergone, the context of this projectile point is not reliable. The general lack of cultural constituents on the surface of the site suggests a limited subsurface artifact assemblage. The site is unlikely to possess significant intact subsurface context and is unlikely to contain further information important to the area or state.

**HECA-6**

Site HECA-6 is a small lithic scatter and shell midden located within the Project Site. The site is located on a northern aspect 15 degree slope of a broad north-trending terrace overlooking the northern edge of the Elk Hills including the Tule Elk Reserve and the agricultural lands south of Buttonwillow, which is visible to the north. The site soil is a loosely compacted, tan to grey, silty sand with abundant limestone and sandstone angular and sub-angular inclusions. Due to decades of agricultural plowing, sheep and cattle herding, and heavy equipment disturbances, the site has been denudated of the dominant vegetation. Low grasses and other ruderal plant species dominate but are very sparse. Major impacts to the site include the previous mentioned agricultural activities; however, this site has been heavily impacted by a heavy vehicle that has left a large track through the center of the site. This track measures 3 m wide and 10 to 25 cm deep and runs through the center of the site north to south.

The sites artifact assemblage is very limited and consists of nine lithic flakes and debitage, a sandstone metate fragment, and a sparse density shell midden. The nine flakes are composed of Monterey chert and basalt and represent early core reduction and tool finishing lithic reduction stages. The sandstone metate is a slab with a single bi-directional use area on one face. The metate measures 25.5 by 27 by 3 cm. The shell midden is of moderate density and found primarily in animal burrow back dirt.

HECA-6 is a relatively small site with a limited surface expression and heavy impacts to its integrity due to heavy equipment impacts. The presence of the freshwater mussel shell exclusively in the backdirt of animal burrows, suggests that the site does in fact contain some subsurface contexts but the sparse nature of the scatter suggests that it very limited and is not likely to be intact. The site is unlikely to contain further information important to the prehistory of the area or the state.

**HECA-7**

Site HECA-7 is a lithic and shell scatter with possible house pits. The site is located in the Project Site and extends into the 200 foot buffer area surveyed around the Project Site. The site is located on a broad, rolling, north-trending, terrace finger ridge that is bound on the east and west by deeply incised intermittent north-trending drainages. The site is situated on an open aspect ridge with variable slopes ranging between 2 and 20 degrees. The site soil is a loosely compacted, tan to grey silty sand with abundant sandstone and limestone pebble inclusions. Due to decades of agricultural plowing, sheep and cattle herding, and heavy equipment disturbances, the site has been denudated of the dominant vegetation. Low grasses and other ruderal plant species dominate but are very sparse.

The remnants of two prehistoric house pits are located within the site boundary. The pits have been impacted by livestock trampling and alluvial erosion. The features are located along the eastern boundary of the site directly above the intermittent drainage. The artifact assemblage of the site is very sparse but significant. The assemblage consists of 10 lithic flakes, a sandstone mortar fragment, and a moderate to very dense mussel shell concentration. The 10 flakes are composed of Monterey and Franciscan chert representing early to late stage core reduction. The groundstone bowl fragment is composed of sandstone and measures 19 by 17 cm with a 16 cm deep ground-out bowl. The fragment has been impacted by plowing and shows scars from being scraped by a metal plow. The bowl has been ground through the bottom which is known as "killing" the bowl. This action is related to funerary practices of the Yokut tribe and suggests the possibility of human burials on the site (Latta 1949). The freshwater mussel shell concentration ranges from moderate (2 to 3 fragments per sq m) to very dense (20 to 30 fragments per sq m). The shell concentrations are intermittent across the site and in some areas only occur in the back dirt of animal burrows while in other areas the shell has eroded out from alluvial sheetwash erosion.

The southern portion of the site, located in the Project Site, has been more significantly impacted by agricultural activities and heavy equipment impacts. This has made the features and artifacts in this portion of the site more visible on the surface. Site HECA-7 has the potential to contain significant subsurface cultural remains that may hold information important to the prehistory of the area and state.

**HECA-8**

Site HECA-8 is a prehistoric lithic scatter and shell midden located in the Project Site. The site is located on a relatively flat dissected finger ridge that is bound on its western boundary by a seasonal ephemeral south- to north-trending drainage. The site is situated on a gentle northern aspect slope of less than 10 degrees on the west boundary and less then 5 degrees on the northern boundary. The site soil is a loosely compacted, tan to grey silty sand with abundant sandstone and limestone pebble inclusions. Due to decades of agricultural plowing, sheep and cattle herding, and heavy equipment disturbances, the site has been denudated of the dominant vegetation. Low grasses and other ruderal plant species dominate but are very sparse.

The site artifact assemblage consists of four gray, tan, and brown Monterey chert flakes that represent early stage core reduction. The associated fresh water mussel shell concentration is very sparse of 2 or less per square meter. The artifact assemblage suggests a limited resource processing area function of the site.

Site HECA-8 is a heavily impacted artifact scatter that appears to be limited to the surface. The limited nature of the fresh water mussel shell scatter suggests that the subsurface deposits of the site are not intact or substantial. The site is not likely to contain further information important to the prehistory of the area or state.

**HECA-10**

Site HECA-10 is a small lithic scatter located in the Project Site. The site is located on the northwest edge of a small north-trending terrace. The site is situated on a northwestern aspect slope of less than 5 degrees. The site soil is a loosely compacted, tan to grey silty sand with abundant sandstone and limestone pebble inclusions. Due to decades of agricultural plowing, sheep and cattle herding, and heavy equipment disturbances, the site has been denudated of the dominant vegetation. Low grasses and other ruderal plant species dominate but are very sparse.

The site artifact assemblage consists of four brown and grey Monterey chert flakes that represent early core reduction phase flakes. The site does not appear to have any significant subsurface cultural context and the site is unlikely to contain any further information important to the prehistory of the area or state.

**HECA-11**

Site HECA-11 is a small lithic and shell midden located within the Project Site. The site is located on a gentle north-trending, dissected terrace. The site is situated on a gentle north and east aspect slope of less than 15 degrees. The eastern portion of the site is deeply incised by the head of an extensive arroyo system that has destabilized and down-cut the terrain immediately east of the Project Site. The sites western boundary is defined by a small ephemeral drainage that runs south to north. The site is also bisected by a two-track road. The site soil is a loosely compacted, tan to grey silty sand with abundant sandstone and limestone pebble inclusions. Due to decades of agricultural plowing, sheep and cattle herding, and heavy equipment disturbances, the site has been denudated of the dominant vegetation. Low grasses and other ruderal plant species dominate but are very sparse.

The site consists of two lithic flakes, a small sandstone metate fragment, a *Tivella* clam shell bead, and a small sparse freshwater mussel shell scatter. The two flakes are composed of Monterey chert that represent late stage core reduction. The metate fragment exhibits a small ground area that represents the remaining grinding surface. The metate fragment measures 8 by 7 by 6 cm. The shell bead is a *Tivella* clam shell also known as a Pismo clam, found along the California Pacific coastline. The bead measures 7 cm in diameter and 0.5 to 1 cm thick. This artifact is considered extremely rare and is a traditional funerary object of the Yokuts tribe (Latta 1949). The freshwater mussel scatter is very sparse with approximately 1 piece per sq m.

Site HECA-11 is a limited artifact scatter that has been heavily impacted by agricultural activities and alluvial erosion. The site is in poor condition and has very little surface integrity. However, the Tivella shell bead was recovered from a depth of approximately 1 m below the modern ground surface in the side wall of the arroyo located on the eastern portion of the site. The presence of this bead suggests the presence of a human burial within a subsurface context of the site.

**HECA-12**

Site HECA-12 is a prehistoric artifact scatter located within the Project Site. The site is located on a broad flat, east- to west-trending terrace ridge that is bound on the south and west by an

intermittent drainage. The site is situated on a open aspect slope of less than 2 degrees. Site soil is a loosely compacted, tan to grey silty sand with abundant sandstone and limestone pebble inclusions. Due to decades of agricultural plowing, sheep and cattle herding, and heavy equipment disturbances, the site has been denudated of the dominant vegetation. Low grasses and other ruderal plant species dominate but are very sparse.

The site artifact assemblage consists of a groundstone mano, a groundstone metate fragment, 2 steatite bowl fragments, a lithic core tool, and a light density freshwater mussel shell concentration. The mano is composed of sandstone and shows evidence of peck shaping along the edges. The mano has a one use surface. The mano measures 15 by 4.5 by 3.5 cm. The metate fragment is also composed of slab sandstone and exhibits one grinding surface. The metate fragment measures 25 by 13 by 5 cm. The 2 steatite bowl fragments are both relatively thin, curved bowl bases with a well-grounded bowl interior. The 2 steatite bowls, however, come from two separate steatite sources. One originates from Santa Catalina Island and the other from the Sierra Pelone source in the Tehachapi Mountain range. The lithic core tool is composed of quartzite and appears to have been used as a chopper. Use wear and retouch are present on all margins of the tool which measures 125 by 105 by 15 mm. The freshwater mussel shell scatter found on the surface of the site is very sparse and number 1 or less per sq m.

Site HECA-12 is a relatively artifact scatter that has been significantly impacted by agricultural activities and alluvial sheetwash action. The presence of groundstone and steatite artifacts suggests the site was possibly a habitation site. The site has the potential to contain information important to the prehistory of area and state.

**JM-HECA-1H**

Site JM-HECA-1H is a historic culvert found within the APE of the linear resources of the Project. The culvert channels a small unnamed, northeast-trending intermittent drainage under the Tupman Road. The site is located within a dissected alluvial sediment terrace overlooking the broad flat floodplain immediately west of the California State Water Project. Site soil is an alluvially-deposited, tan to brown, loam sand with abundant sandstone and limestone pebble inclusions. The site vegetation is dominated by salt bush with small patches of various grasses.

The site consists of a historic metal culvert with a modern steel extension and a small historic artifact scatter. The culvert measures 11.5 feet in length and 5 feet high with an interior diameter of 4.5 feet. The western end of the culvert is the historic portion and is constructed of riveted iron plates that appear to have been used originally as a large storage tank. This culvert may have been constructed of material recycled from the NPR located nearby. The mouth of the culvert is constructed of very weathered 6 by 6 inch beam segments that measure 3 to 5 feet in length. The wood appears to have been painted with white lead paint as a preserving agent. The eastern end of the culvert has been extended by a modern steel culvert and is supported on the eastern opening with telephone pole segments and pressure-treated wood along with what appears to be the original wood of the eastern opening. The eastern section was likely an extension of the original culvert when the road was widened. The artifact scatter is located along the right-of-way (ROW) fence of the road and consists of a Hemingray translucent glass wire insulator, two historic bottles, and a fragment of porcelain plate. The bottles are both clear hand-blown molded beverage bottles that likely held a non-alcoholic beverage. The insulator is completely intact and still has the wooden peg that attached it to the pole inserted into its base.

This site is located along a historic road and was likely built along with the creation of Tupman Road or was an original improvement. The bottles and insulator were likely deposited when the telephone line was replaced historically. Overall, this site is interesting to the development of the area: however, it is unlikely to contain further information important to the history of the area or state.

**KRM-001H**

Site KRM-001H is a historic ditch segment found with the APE of the linear resources of the Project. The linear site is located along a leveled agricultural field at the edge of the West Side Canal. The site was located at the time of recording next to a planted cotton field. Soil is a dark brown alluvial that was originally deposited by the Buena Vista Slough.

The site consists of a single ditch channel measures 2,780 feet long running southwest to northeast. The ditch measures 1 foot across at its bottom and 5 feet across at the top. The majority of the ditch is lined with concrete that appear to be very weathered and of an old mixture. The ditch appears to be used on a regular basis as modern water-gates have been added to the ditch and it is connected to other active canals and water facilities.

Site KRM-001H appears to be a historic ditch that has remained in use for a long period of time. The site does not represent any particular significant style and is not significantly unique to the region.

**KRM-010H**

Site KRM-010H is a historic oil-road that is located in the 200 foot buffer surveyed around the Project Site. The site extends across several terrace ridges and a several small intermittent drainages. Surrounding vegetation includes sparse salt bush, sagebrush, and various sparse grasses.

The resource consists of an oil-indurate road that extends diagonally through a portion of the NPR-1 area. The site consists of natural soil and gravel which appears to have been originally bulldozed to grade to cut the road; then covered in several layers of oil to make a loose asphalt like road surface. This segment of the linear feature measures 24 feet wide at the top and 30 feet at its base and extends 6 to 12 inches off the modern ground surface. This segment extends uninterrupted a little over 1 mile.

The road is badly eroded and has become a channel of alluvial sheet wash floods, which has caused rills and down-cutting across the resource. This road is likely associated with the NPR thereby giving it some historical significance. However this road is not unique to the region or original NPR-1 area. This style of road is quite common in the area and region and is not of an unique style or location.

**SMG001H**

Site SMG001H is a historic trash scatter located within the APE of the linear resource of the Project. The site is located in a low depression next to a developed road. The site soil is grey silty sand that has been recently impacted by heavy equipment. The site vegetation consists on a moderately dense cover of salt bush and various sparse grasses.

The site consists of two separate can and bottle scatters. The first appears to be historic while the other is not. The historic scatter consists of 40 or more cans of milk tins, vegetable, fruit, coffee, baking supplies, meat, and seafood. The deposit also contained saw cut bone and other animal

meat bones. The 11 milk cans that were intact enough to take accurate measurements of their dimensions provided a date range of 1931 to the mid-1950s.

Site SMG001H is a common historic site type across the entire western U.S. The material deposited here is likely associated with the historic occupation of the Elk Hills and the unincorporated community of Tupman but not with any specific historical figure. The site does not contain any significantly unique element that makes it significant and it is unlikely to contain any further information important to the prehistory of the area or state.

**SMG002H**

Site SMG002H is a historic trash scatter located within the APE of the linear resources of the Project. The site is located in a depression next to a developed road. The site soil is grey silty sand that has been recently impacted by heavy equipment. The site vegetation consists on a moderately dense cover of salt bush and various sparse grasses.

The site consists of a single large historic artifact scatter consisting of 30 or more tin cans, 80 shards of bottle and window glass, and a small scatter of historic ceramics. The tin cans consist of vegetable and fruit cans, coffee cans, lard buckets, baking powder cans, and evaporated milk tins. The glass consists of brown, cobalt, aqua, and clear bottle glass, with a small number of clear window glass shards. The ceramics include white earthenware, stoneware, and porcelain shards. The evaporated milk tin intact enough to be measured supplied a date range of 1920 to 1930.

Site SMG002H is a common historic site type across the entire western U.S. The material deposited here is likely associated with the historic occupation of the Elk Hills and the unincorporated community of Tupman but not with any specific historical figure. The site does not contain any significantly unique element that makes it significant and it is unlikely to contain any further information important to the prehistory of the area or state.

**JM-BVWD-1**

Site JM-BVWD-1 is a prehistoric lithic scatter located in the APE of the linear resources of the Project. The site is located in a wide flat alluvial deposited plain that was historically and prehistorically within the Buena Vista Slough. The site soil is a gray to tan silty loam with some moderate pebble inclusions. The site vegetation is bound by a wheat field on the east and a desert scrub consisting of salt bush, sage, and various bunch grasses to the west. The site is located at the bottom of the West Side Canal which at the time of the survey was empty. The site measured 1.8 m below the modern ground surface.

The sites artifact assemblage consists of 39 pieces of lithic debitage, a projectile point tip fragment, and three pieces of burnt faunal bone. The 39 pieces of debitage break down to 17 core reduction flakes and 22 pieces of shatter. The debitage is composed of Monterey and Franciscan chert which are both local source materials. Within the flakes, eight were noted to have expedient use wear along some of the flake margins. The projectile point tip fragment is a small biface fragment composed of Monterey chert which measures 10 by 10 by 3 mm. The three faunal bones are small, burned, long bone fragments of either deer or elk.

This site is a small artifact scatter but it is believed to represent a much larger site. The site was found at the bottom of a water canal along the eastern edge in a long thin line. It was originally interpreted to be the redeposition of artifacts from a site further up the canal. This was rejected as it was unlikely the artifacts would have deposited so regularly along one side of the canal. It

is more likely that the canal construction and upkeep has cut horizontally into the edge of a deeply stratified site that is buried 1.8 m below the modern ground surface. As this site is located within the Buena Vista Sough this is entirely probable. The presence of the artifacts suggests that further intact subsurface cultural context remain intact well below the levels of modern agricultural disturbances. The site is likely to contain *in situ* subsurface cultural artifacts and is likely to contain information important to the prehistory of the area and state.

**JM-BVWD-2**

Site JM-BVWD 2 is a segment of the West Side Canal located within the APE of the linear resources of the proposed project. The site is located in the broad flat flood plain of the drained Buena Vista Slough north and east of Elk Hills. The West Side Canal is currently operated by the Buena Vista Water Storage District (BVWSD). The site runs generally southwest to northeast. The site passes through one general environment which is best described as being an irrigated desert. The east side of the canal is bound almost exclusively with agricultural fields. The west side is bound with open undeveloped desert that occupies the location of the original Buena Vista Slough channel. Natural vegetation dominates on the west side of the canal and includes salt bush, sagebrush, a few stands of cottonwood and willow trees, and various grasses. The canal is constructed of the local soil that is a grey to tan brown alluvially deposited silty loam with more clayey loam present at deeper levels of the canal.

The site consists of 15.886 miles of the West Side canal and several historic and more modern canal features directly connected to the features operation. The canal is constructed of excavated, compacted, and graded local soil that was removed and placed on either side of the canal. The compacted excavated soil forms two roads that parallel the canal. The canal itself is a large flat bottomed "V" shaped trench with a graded base and sides. The canal measures approximately 7 to 8 feet deep and 43 feet from edge to edge. The canal has several feature types associated within its operation. These include partially removed wooden weir dams, modern concrete weir dams, lateral head gates, railroad car bridges and concrete diversions. The Westside Canal (also known as the Outlet Canal) which runs through the Central Valley from Tupman to one mile north of Highway 46. The first inhabitants of the area were Yokut Indians who arrived roughly 8,000 years ago. The discovery of gold in the Sierra Nevada Mountains and the discovery of oil in 1865 helped attract Anglo-European settlers. At that time, the area where the canal lies was a tule reed-infested malarial swamp. In 1863, a former California state senator named Colonel Thomas Baker arrived and began encouraging others to drain and reclaim the land. He began farming alfalfa and helped subsidize development and in 1869 the town that had arisen was named in his honor. Early settlers also grazed cattle on the rich natural grasses.

Following a widespread drought in the 1870's, a major effort was made to drain the swamps and plant crops. The Buena Vista Slough, composed of rich organic alluvially soil deposited by the marsh and water channels, was drained from the late 1870s through to the early 1900s. Area residents diverted the flood prone Kern River and the giant landholding company, Miller and Lux planned and built the West Side Canal to help distribute water to the resulting farms (Bartel 2008). Miller and Lux held title to the canal until the 1920s when grant deeds transferred ownership to the Buena Vista Water Storage District, which still owns it today (Bartel 2008).

The canal is still used to irrigate farms and transfers water from the Kern River and State of California resources. It is usually full from early June until late August and during the month of

February when the crops that make Kern County one of the most important agricultural centers in California are being planted.

The gates located along the length of the canal vary in age, but are still used to control the flow of water from the canal to the many laterals that branch off to individual fields.

There are the remains of several of these structures located along the length of the ditch, all similar in design and construction. Built of wooden beams and posts, they structures appear to be from the early part of the 20th century. They all feature a wooden frames laid on the bed of the canal with supporting timbers set into the side walls. These remnants are found just downstream of existing concrete weirs that were constructed in the 1980s-1990s (Bartel 2008). It appears that the main wooden structures were removed when the concrete replacements were built, but the foundations and supporting features were left in place. The remains found in the canal suggest that foundations were made of wooden planks sunk into the canal bed in a square shape. A grid of wooden beams was then laid inside the wooden "box" that was formed and then the weir was constructed on top of this structure. In some places stepped wooden sections remain in the side walls of the canal that were clearly used to help secure these weirs.

The more modern features of the canal are the concrete weirs used to control and measure water flowing through the canal. There are several of these structures located along the length of the ditch, all similar in design and construction. Built of reinforced concrete and steel, the structures appear to have been installed in the 1980's or 1990's (Bartel 2008). They all feature a concrete foundations set into the side walls of the canal with a steel frame linking the two concrete sections. The steel beams form a sloping wall into which wooden boards are slid that act as a water break. The boards can be replaced periodically (as they wear out) and the height of the weir can be adjusted as well. The steel frame also serves as a bridge connecting the two side of the canal. All of the bridges are enclosed with railings made of steel pipe sections welded together.

There are a number of laterals feeding to smaller canals and ultimately to the agricultural fields along the canal. These laterals are all joined to the canal by similar concrete valve structures. The structure is built of reinforced, cast, concrete and has two large metal pipes running through it to connect the two waterways. There are no build dates visible on the structure but it is estimated that it was constructed in either the immediate pre-war or post-war years. There are concrete form work marks visible upon the surface of the culvert that show it was constructed with 4 foot by 2 foot panels rather then the 4 foot by 8 foot panels that became common in the second half of the 1950s. The two inlet pipes (which run north to south) are closed of with cast iron canal gates manufactured by the Waterman Company of Exeter, CA.

In several locations along the canal there appears to have been several bridges added possibly ranchers or the BVWSD, made from old railroad flat cars that were formerly operated by the Southern Pacific Railroad. It is unknown when these bridges were installed, but the flat cars appear to be 30-50 years old. The bridge crossed the canal and appears to have been set directly into the dirt—there is no foundation or support structure visible. The top of the car has been covered with dirt as well.

Site JM-BVWD 2 is a very significant site that has been used continuously for over 100 years. The canal's location has not changed and its general function has remained constant. Unfortunately the site has been upgraded, altered, and maintained to the extent that the canal is now essentially a modern feature. The canal does represent important aspects of the agriculture

and land development of western Kern County and the State of California as a whole. The canal's setting, feel, and purpose all remain intact; however, the integrity of the site has been compromised by its continual use and general improvement and upkeep.

**BS-BVWD-1**

Site BS-BVWD-1 is a historic adobe structure located within the APE of linear resources of the proposed project. The site is located on the broad flat alluvial plain deposited by the Buena Vista Slough that has since been graded for agricultural development. The site is located on the edge of a developed cotton field and backs up to the West Side canal. The site soil is a tan to brown, alluvially deposited, clayey loam with a small amount of inclusions of various sources and material.

The historic structure is an adobe barn that has been altered significantly. The exact age of the barn is unknown but it appears to be circa 1920-1930. Rectangular in shape with a hipped roof with exposed rafter ends, the barn has several doors and windows and appears to be used for both storage and animal shelter. The south and east elevations (and to a lesser degree the north elevation) have lost much of the mud plaster or stucco covering which has exposed the bricks causing them to deteriorate. It appears that the barn is built with cement footers and its roof has factory made gable vents on its north and south ends. The west elevation has been altered to accommodate two large openings that appear to have been made to make the barn a two car garage. The interior of the barn shows evidence of having pens or stalls removed for the barn to be used as a garage. The structure is currently used for storage and as an outdoor covered family gathering area.

Site BS-BVWD-1 is a historic structure that appears to be associated with the agricultural development of the area. The structure is not related to any known specific historically significant figures or events. The integrity of the structure has been compromised by erosion, alterations in use and structure, and general neglect. The site is not likely to contain any further information important to the history of the area or state.

**HECA-BUF-1**

Site HECA-BUF-1 is a historic refuse dump located in the 200 foot buffer area of the Project Site. The site is located in the bed of an eroded intermittent drainage at the base of the eastern slope of a north-trending terrace ridge. The site soil is composed of alluvially-deposited tan to grey, silty sand with abundant sandstone and limestone inclusions. Vegetation on site is very sparse and consists of medium sized salt bush and very sparse low grasses. The site shows evidence of alluvial erosion and livestock grazing impacts. This area was never developed agriculturally.

The site artifact assemblage consists of 30 tin cans, historic glass, historic metal, and historic license plates. The tin cans consist of vegetable, fruit, meat, seafood, kerosene, and milk cans. The glass component of the assemblage consists of clear, rose, blue, green, brown, and amethyst bottles and shards. The complete vessels include a brown bottle, a clear mayonnaise jar, and two small ant poison bottles of green glass. The assemblage contains three historic license plates that date between 1936 and 1938. The artifact assemblage of the site ranges between the 1920s and 1960s. The assemblage consists primarily of domestic refuse. It is possible this site is related to the historic ranching and farming activity in the area.

Site HECA-BUF-1 was a historic refuse scatter that appears to have been deposited over several decades between the 1920s and 1950s. The refuse was dumped in an intermittent drainage and the slopes along its western edge. The artifacts have been displaced and re-deposited along the drainage bottom and are in most cases not *in situ*. This is a very common site type throughout the western U.S., and it is unlikely this site contains information important to the history of the area or state.

**HECA-BUF-2**

Site HECA-BUF-2 is the remnants of a historic oil derrick located in the 200 foot buffer area of the Project Site. The site is located on a broad dissected terrace ridge with a north-trending small ephemeral drainage running through the center of the site. The site soil is composed of alluvially-deposited tan to grey, silty sand with abundant sandstone and limestone inclusions. Vegetation on site is very sparse and consists of medium sized salt bush and very sparse low grasses. The site shows evidence of alluvial erosion and livestock grazing impacts. This area was never developed agriculturally.

The site consists of several large features and a sparse historic artifact scatter. The features include a capped well and derrick foundation pads, the belt house foundation, a small concrete box associated with the steam pipe, the slush pond, the settling pond, a dismantled pipeline, and the brick foundation of the steam boiler. All of the features are clustered together except the boiler remains which are approximately 215 feet northwest of the derrick remains. The artifact scatter is a large concentration of nails, wire, and metal cable. This concentration likely represents the remains of the derrick being dismantled after the well was abandoned.

This site is outside the boundary of NPR-1 and likely represents a smaller oil firm that bought claims around the NPR during the early part of the twentieth century. There is no indication that this site hold any regional significance and it does not appear to be of any unique design or method of historic oil drilling. The site appears to be thoroughly dismantled and is unlikely to contain further information important to the history of the area or state.

### *5.3.1.10 Previously Recorded Cultural Sites*

The following sections are descriptions of the previously recorded cultural sites.

**P15-002464**

Site P15-002464 is a lithic scatter and shell midden located within the APE of the Project linear resources. The site is located at the base of a broad sloping terrace that is eroding into a narrow alluvial fan trapped by the State Water Project. The site is prone to alluvial runoff from the terrace slope. The site soil is loosely compacted, silty sand with abundant limestone and sandstone pebble inclusions. Vegetation is dominated by large salt bush and sparse bunch grasses.

This site is crossed by one linear resource of the Project and was not noted during the original foot survey by URS archaeologists. The site was revisited a second time to determine the site's presence and the potential impact of this portion of the Project. The site constituents were not noted in the APE of the Project. Site components were found in small quantities outside the APE in distinct concentrations.

**P15-003077/H**

Site P15-003077/H (3077) is a previously recorded prehistoric lithic scatter and fresh water mussel shell concentration that covers a large area within the Project Site and the associated 200 foot buffer area. The site was originally recorded by the Par Environmental Services (Par) who recorded the extensive lithic scatter and mussel shell concentrations that make up the site. Par located two definite concentrations which they tested and found limited depth. Par was unable to delineate the northern boundary of the site due to land owner access issues.

URS surveyed the area north of the previous site boundary and found the site to extend significantly north into the current Project Site. This portion of the site contains 2 projectile point fragments, a 14 piece scatter of lithic flakes, an exhausted chert core, and a moderate-density concentration of fresh water mussel shell. URS also recorded the 50 plus trenches that are associated with the Naval CB's tenure on the NPR beginning in 1943. At the time of the original recording they were not yet old enough to be considered historic features.

The projectile points on the site are both fragments. The first is a lanceolate-shaped, well shaped biface fragment composed of heat-treated Monterey chert. The point has lost its tip and the majority of its base. The fragment measures 50 by 20 by 7 mm. The second projectile point is a short triangular point composed of mottled black and white chert. The point exhibits deep "U" shaped side notches with rounded shoulders and a slightly indented base. The tip of this projectile point appears to have broken upon impact with something. However, retouch wear is present at the tip as well suggesting that repairs were attempted before it was discarded. The 14 piece lithic scatter is composed of Monterey and Franciscan chert and represents primarily mid- to late-stage core reduction. The mussel shell concentration is of moderate density and is persistent through the entire site.

Two separate areas of the original recorded site area were tested for subsurface contexts and eligibility status. The northern portion of the site delineated by URS, represents a new portion of the site that may add to the significance of the site and potentially contain information important to the prehistory of the area and state.

**P15-006771/H**

Site P15-006771/H is a previously recorded fresh water mussel shell scatter located within the 200 foot buffer of the Project Site. The site is located on a wide north-trending 2 to 3 degree slope that is bound on the south by an unnamed intermittent drainage. Site vegetation is dominated by large salt bush, sagebrush, and various sparse grasses. The site was originally recorded and shovel tested by Pacific Legacy, Inc. (Pacific Legacy), in 1997 that tested two areas near the site's southern boundary. The excavations found the site to contain subsurface artifacts, however, they were unable to find intact subsurface contexts. Chert flakes and shell beads were the predominant artifacts recovered from very shallow contexts of less then 10 cm. Radiocarbon samples of bulk shell supplied a series of date ranges of A.D. 1050 to 1085, A.D. 1120 to 1140, and A.D. 1155 to 1295.

URS revisited the site and found the site condition and surface artifact constituents accurately recorded by Pacific Legacy. URS updated the site by recording the 67 Naval Construction Battalion (CB) trenches located across the surface of the site. At the time of the original recording, the features were not considered significantly-historic and were only noted in the write up. The trenches do not appear to be laid out in any planned or organized pattern and

appear to be simply practice for the CB engineers. The trenches likely date to the World War II period when the NPR was manned by CBs.

Site P15-006771/H has not been significantly impacted since its previous recording. The site is still prone to soil erosion and alluvial sheet wash action. The CB trenches are the largest impacts to the site and they have uncovered and destabilized several concentrations of subsurface artifacts.

**P15-006776**

Site P15-006776 (6776) is a large prehistoric artifact and freshwater shell concentration with two possible house pit depressions located within the Project Site. The site is located on a rolling north-trending dissected ridge that is bound on the west by a small ephemeral drainage, on the east by a 10 feet deep cut bank, and on the northern boundary by the State Water Project. Site soil is a tan to brown alluvial silty sand with abundant limestone and sandstone pebble inclusions. Due to decades of agricultural plowing, sheep and cattle herding, and heavy equipment disturbances, the site has been denudated of the dominant vegetation. Low grasses and other ruderal plant species dominate but are very sparse.

The site was originally recorded as an isolate by Peak and Associates in 1991 who recorded the presence of a groundstone bowl. The isolate was later re-recorded by Pacific Legacy in 1997. Pacific Legacy expanded the site boundary and tested the site. Pacific Legacy used 37 shallow shovel probes of less than 6 cm deep and two 1 by 1-m test units. Pacific Legacy found mainly chert flakes and a few shell beads between 0 and 0.06 cm below the modern ground surface. Other surface cultural constituents noted by Pacific Legacy include an obsidian biface fragment, a sandstone mano, metate, and the sandstone bowl mortar noted by the original recorder.

URS revisited the site and noted significantly more surface artifacts then previously recorded. URS expanded the site boundary further south and west. URS archaeologists also noted two possible house pit depressions. A total of 26 surface artifacts were noted during the field survey of this site. These artifacts include 11 sandstone, groundstone metate fragments; 3 steatite cooking artifacts including 2 bowl fragments and a griddle fragment; 3 groundstone mortar fragments, 2 groundstone manos, 1 large pestle composed of a granitic volcanic material, 3 chert biface fragments, 1 lithic core composed of quartzite; 1 *Olivella* shell money bead; and a small piece of calcified bone. This list does not account for the large quantity of lithic flakes composed of various materials including chert, quartzite, and obsidian; or the very dense concentration of freshwater mussel shell that is visible on almost all portions of the site, but has its highest density of 50 or more per square meter near the eastern portion of the site. This extensive artifact assemblage and possible features suggests that the site was a village or location of long-term occupation that was used for the processing of various resources.

The discrepancy between the URS observations and those of the previous recorders may be due to the site having been more recently impacted by agricultural disking and heavy equipment. The site has had nearly 10 years to become further eroded and reveal more artifacts and features that were previously obscured. The site has the potential to contain significant subsurface cultural remains that may be important to the prehistory of the area and state.

**P15-006767**

Site P15-006767 is a prehistoric artifact scatter and freshwater mussel shell midden located within the APE of the Project linear resources. The site is located on two dissected ridges

divided by a north-trending intermittent drainage. This site is on a gentle northern aspect slope of less then 2 degrees with slopes of 10 to 15 degrees along the drainage. The site soil is loosely compacted, silty sand with abundant limestone and sandstone pebble inclusions. Vegetation is dominated by large salt bush and sparse bunch grasses.

This site is crossed by one linear resource of the Project and was not noted during the original foot survey by URS archaeologists. The site was revisited a second time to determine the site's presence and the potential impact of the proposed portion of the Project. The site constituents were not noted in the APE of the Project. Site components were found in small quantities outside the APE in distinct concentrations.

**P15-009738**

Site P15-009738 is a previously recorded historic stock yard and associated buildings located within the APE of a linear resource of the Project. The site is located on a large flat plain on a slight southern aspect slope of 2 to 5 degrees. The site soil is alluvially-deposited silt loam with abundant inclusions of various material and size consistent with the deposition of the Buena Vista Slough. The site is completely covered with large scale agricultural orchards and fields. Currently, nut trees and alfalfa cover 90 percent of the site area.

The site was originally recorded by Pacific Legacy in 1997 who recorded the stock yard, associated buildings, and extensive artifact scatter as almost entirely intact with very few noted impacts. URS revisited the site and found the site almost completely obscured by agricultural development. URS noted two hay barns, one concrete slab, and the fragmentary remains of several smaller concrete foundations. These foundations likely represent previously recorded structures associated with residences, barns, water tanks, and feed troughs. Artifacts observed include widely scattered glass, nails, and ceramic fragments. The two hay barns are the only remaining standing structures at the site. The rest of the site's features and structures appear to have been dismantled or burned.

Site P15-009738 has been significantly impacted by agricultural development. Only the smallest of indications remains of the original site and its associated constituents.

#### *5.3.1.11 Native American Consultation*

The Native American Heritage Commission (NAHC) was contacted on 8 March 2008 and again 20 June 2008 to request a search of the Native American Sacred Lands File (SLF) to determine the presence of Native American sacred sites within the APE. A list of Native American Contacts that may have some knowledge of known cultural resources and sacred sites within the APE was also requested. The NAHC responded on 10 March and 23 June 2008 and indicated a records search of the SLF failed to indicate the presence of Native American cultural resources in the immediate APE. In addition to the response letter, the NAHC also supplied a Native American representative contact list. Each listed contact was sent a notification of the proposed undertaking by mail 14 March 2008 and 24 June 2008 with a request for a representative to respond with any information concerning sacred sites or other cultural resources of concern within the Project APE.

To date, one tribal group, the Tejon Tribe, has responded and shown interest in being kept informed of the Project's progress. Correspondence letters between URS on behalf of HEI and

the NAHC, and a spreadsheet showing those Native American representatives contacted are included in Confidential Appendix H, Cultural Resources Technical Report.

## 5.3.2 Environmental Consequences

### *5.3.2.1 Significance Criteria*

The cultural resources investigations and reports for the Project were conducted in accordance with the California Environmental Quality Act (CEQA), Public Resource Code (PRC), § 21000 *et seq*., and California Code of Regulations (CCR), Title 14 Chapter 3, § 15000. Consideration of significance as an "historical resource" is measured by cultural resources provisions considered under CCR § 15064.5 and § 15126.4. Generally, a historical resource (these include the historic built environment and historic and prehistoric archaeological resources) is considered significant if it meets the criteria for listing on the CRHR. These criteria are set forth in CCR § 15064.5, and include resources that:

- Are associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
- Are associated with lives of persons important in our past
- Embody 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
- Have yielded, or may be likely to yield, important prehistory or history

CCR § 15064.5 and § 21084.1 further states that a resource not listed in or determined to be eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to Public Resource Code § 5020.1[k]), or identified in an historical resources survey can still be considered a historical resource (as defined in Public Resources Code § 5020.1[j] and 5024.1) by a lead agency.

Under CCR § 15064.5(b), a project potentially would have significant impacts if it would cause a substantial adverse change in the significance of an historical resource (i.e., a cultural resource eligible to CRHR criteria), or would disturb human remains. The types of substantial adverse changes include physical demolition, destruction, relocation, or alteration of the resource.

CCR § 15064.5 also assigns special importance to human remains and specific procedures to be used when Native American remains are encountered. These procedures are also detailed under Public Resource Code § 5097.98.

Impacts to "unique archaeological resources" are also considered under CEQA, as described under Public Resource Code 21083.1. A unique archaeological resource implies an archaeological artifact, object, or site about which it can be clearly demonstrated that – there is a high probability that it means one of the following criteria:

- The archaeological artifact, object, or site contains information needed to answer important scientific questions and there is a demonstrable public interest in that information.
- The archaeological artifact, object, or site has a special and particular quality, such as being the oldest of its type or the best available example of its type.

- The archaeological artifact, object, or site is directly associated with a scientifically recognized important prehistoric or historic event or person.

A non-unique archaeological resource indicates an archaeological artifact, object, or site that does not meet the above criteria. Impacts to non-unique archaeological resources and resources which do not qualify for listing on the CRHR receive no further consideration under CEQA.

In many cases, determination of a resource's eligibility to the National Register of Historic Places (NRHP) or CRHR (or its uniqueness) can be made only through extensive research. As such, the best alternative to preserve historic resources is the no action alternative, however, because this alternative is not always feasible, any project should consider alternatives or mitigation measures to lessen the effects to these resources. Where possible, to the maximum extent possible, impacts to resources should be avoided. If, as the Project proceeds, it proves impossible to avoid cultural resources, formal eligibility evaluation will be undertaken. If the resource meets the criteria of eligibility to the CRHR, it will be formally addressed under CCR § 15064.5 and § 15126.4.

#### *5.3.2.2 Resource Eligibility Assessment*

**Eligible Sites**

The archaeological inventory recorded and re-evaluated eight sites recommended as potentially eligible for the CRHR. These include HECA-CUL-2, HECA-CUL-3, HECA-CUL-7, HECA-CUL-11, HECA-CUL-12, JM-BVWD-1, P15-003077/H, and P15-006776. These sites were all recorded and evaluated based on features and artifacts found on the modern ground surface. The majority of these sites are recommended potentially eligible due to the presence of a relatively large artifact assemblage suggesting a potentially long-term occupation.

One site, HECA-CUL-11, is recommended potentially eligible based on the presence of a known Yokut funerary object found at a significant depth. The surface artifact assemblage of this site is very limited and eroded, however, the funerary object was noted at a depth of over 50 cm below the modern ground surface which suggests the site may contain intact human remains.

Site P15-006776 was previously tested by Pacific Legacy in 1998. Their results provided radiocarbon dates of the surface shell midden and found a moderate level of subsurface cultural deposits at very shallow depths. URS recommends testing this site again based on the large previously unrecorded surface artifact assemblage and the identification of two possible prehistoric structures. The URS archaeologists noted and recorded more significant surface artifacts and features then either of the previous recordings combined. A more aggressive testing strategy on this site may reveal the sites true data potential and eligibility.

**Non-Eligible Sites**

The archaeological inventory recorded and re-evaluated a total of 34 cultural resources that are recommended not eligible for the CRHR which are listed in Tables 5-1 and 5-2. This includes a total of 17 isolates located within the Project Site and the associated linear resources. Isolated finds are by definition considered not eligible for the CRHR and no further work is required concerning these resources. The remaining 17 not eligible sites were recorded and evaluated based on the artifacts and site conditions of modern ground surface. A majority of these sites are recommended not eligible based on the lack of physical evidence or data potential, or the significant loss of site integrity.

Site JM-BVWD-2 is the West Side Canal which has a long history of continuous use stretching back over 100 years. The canal possesses significant historical associations with both historical events and trends in California history and significant historical figures. However, the sites integrity has been compromised by improvements, maintenance, and development and is now essentially a modern structure, and thereby no longer eligible for the CRHR.

#### *5.3.2.3 Direct and Indirect Impacts*

Direct impacts are typically associated with construction activity and have the potential to immediately alter, diminish, or destroy all or part of the character and quality of historic architecture and archaeological resources. Indirect impacts are related to the primary consequences of the completed archaeological resources. Indirect impacts are related to the primary consequences of the completed Project and can cause a change in the character or use of the built environment by the introduction of undesirable auditory or visual intrusions.

### 5.3.3 Cumulative Impacts Analyses

Cumulative impacts to the cultural resources at the Project are considered to be negligible.

### 5.3.4 Mitigation Measures

The Project is anticipated to impact CRHR eligible or unique cultural resources. The following section details recommended mitigation methods for the potentially impacted sites.

#### *5.3.4.1 Site Evaluation and Data Recovery*

**CUL-1:** Prior to the start of project-related construction activities (defined as any construction-related vegetation clearance; ground disturbance and preparation or site excavation activities), the project owner shall provide the CEC Compliance Project Manager (CPM) with the name and statement of qualifications for its designated cultural resource specialist and alternate cultural resource specialist, if an alternate is proposed, who will be responsible for implementation of all cultural resources Conditions of Certification.

The statement of qualifications for the designated cultural resource specialist and alternate shall include all information needed to demonstrate that the specialist meets the minimum qualifications set forth below, including the following:

a. A graduate degree in anthropology, archaeology, California history, cultural resource management, or a comparable field;

b. At least three years of archaeological resource mitigation and field experience in California; and

c. At least one year's experience in each of the following areas:

    1. Leading archaeological resource field surveys;

    2. Leading site and artifact mapping, recording, and recovery operations;

    3. Marshalling and use of equipment necessary for cultural resource recovery and testing;

4. Preparing recovered materials for analysis and identification;
5. Determining the need for appropriate sampling and/or testing in the field and in the lab;
6. Directing the analyses of mapped and recovered artifacts;
7. Completing the identification and inventory of recovered cultural resource materials; and
8. Preparing appropriate reports to be filed with the receiving curation repository, the State Office of Historic Preservation (SHPO), and all appropriate regional archaeological information center(s).

The statement of qualifications for the designated cultural resource specialist shall include:

a. A list of specific projects the specialist has previously worked on;
b. The role and responsibilities of the specialist for each project listed; and
c. The names and phone numbers of contacts familiar with the specialist's work on these referenced projects.

If the designated specialist does not intend to personally supervise all surveys, studies, monitoring, or excavations, the principal shall designate the name and qualifications of a comparably qualified alternate cultural resource specialist. The specialist shall also provide the name and qualifications of any potential consultants such as historian or architectural historian who may participate.

**CUL-2:** As listed in Table 5.3-3, Previous Cultural Resource Inventories, and Table 5.3-4, Newly Recorded Sites, URS recommends that sites CA-KER-3077/H, CA-KER 6776, HECA-02, HECA-03, HECA-07, HECA-11, HECA-12, and JM-BVWD-1 are potentially eligible for the CRHR under Criterion 4. If these sites cannot be avoided by the Project, a Phase II testing program will be conducted to determine the nature and extent, if any, of the subsurface deposits of the sites, and to firmly establish CRHR eligibility. Sites that are recommended as eligible for the CRHR and that cannot be avoided by the Project will be subject to a data recovery program. The plan for the data recovery program will be prepared by the Cultural Resource Specialist (CRS) and approved by the CEC and the Applicant, and be included as part of the Project Cultural Resource Research design implemented by the Conditions of Approval for the Project.

#### *5.3.4.2 Avoidance*

**CUL-3**: In the event cultural resources are encountered prior to or during construction activities, including subsurface excavation, construction activities in the immediate vicinity of the identified resource will be halted and a qualified archaeologist will identify the nature and boundary of the finds and assess whether the proposed activities will impinge upon a cultural resource. Routes of any access roads, or other development that must be built or graded that are outside of areas previously surveyed for cultural resources will be subject to archaeological survey prior to construction. In the event the resource is identified as a potentially significant cultural resource, planned construction activities will be modified to avoid the resource if feasible. If avoidance of the resource is not feasible, the archaeologist will identify the proper course of testing, excavation, recovery, and documentation to be undertaken in order to reduce

Project-related impacts to a less-then-significant level. In the event the archaeological resources are discovered during the course of construction, activities related to the Project, grading, and/or excavation activities within 100 feet of the potentially significant resource should be monitored by a qualified archaeologist.

#### *5.3.4.3 Physical Demarcation and Protection*

**CUL-4:** In instances where a Project facility must be placed within 100 feet of a known cultural resource previously found eligible for inclusion on CRHR, the cultural resource will be temporarily fenced or otherwise demarcated on the ground, and the area will be designated environmentally sensitive. Construction equipment will be directed away from the cultural resource and construction personnel will be directed to avoid entering the area. Where cultural resource boundaries are unknown, the protected area will include a buffer zone with a 100 foot radius. In some cases, additional archaeological work may be required to demarcate the boundaries of the cultural resource to ascertain whether the cultural resource can be avoided.

#### *5.3.4.4 Preconstruction Assessment and Construction Training*

**CUL-5**: A qualified professional archaeologist will be retained to monitor all ground-disturbing activities associated with the Project. Ground-disturbing activities include clearing, grubbing, grading, and trenching within the Project APE. The archaeological monitor will visit the Project prior to commencement of construction activities to become familiar with the site conditions. The archaeological monitor will attend the pre-construction meeting and work with the CEC, the Applicant, and construction management staff to suspend or redirect construction activities if cultural materials are encountered. The archaeological monitor will also provide training to appropriate construction personnel on the Project Site to explain the importance of and legal basis for the protection of significant archaeological resources.

#### *5.3.4.5 Archaeological Monitoring*

**CUL-6**: The archaeological monitor will be equipped with a cellular telephone to ensure rapid communication with the designated CRS to promptly report any cultural finds or discuss any problems as they are encountered in the field. The Cultural Resource Monitor (CRM) will keep a daily monitoring log of construction activities, observations, types of equipment used, problems encountered, and any new archaeological discovery (including the cultural material observed and location). Photographs will be taken as necessary to supplement the documentation. These logs will be signed and dated by the CRM and included within the monitoring report.

The CRM will observe all ground-disturbing activities within the Project APE and construction laydown area. The CRM will be authorized to temporarily halt ground-disturbing activities in the immediate vicinity of a discovery in the event that cultural resources are uncovered during construction. Similarly, if the construction staff or others identify cultural resources during construction activities, they will halt construction in the immediate vicinity, and immediately notify the CRM and Project Supervisor. The CRM will then immediately notify the CRS. The CRM will use flagging tape to delineate the area of the find and protect the resources from construction activities. Construction activities will not take place within the delineated discovery area until the CRM, in consultation with the CRS and CEC, can inspect and evaluate the

significance of the find and implement mitigation measures, if needed. During this time, construction activities may be redirected to other areas outside of the flagged area.

After all ground-disturbing activities are complete, a cultural resources compliance monitoring report will be prepared by the CRS. The report will include the daily monitoring of cultural resources, a description of activities monitored, and the number of types of new cultural resource discoveries, including assessment and treatment action.

#### *5.3.4.6 Native American Monitoring*

**CUL-7**: In order to ensure participation by interested members of the Native American community, it is recommended that a Native American monitor be present during archaeological testing and/or data recovery for cultural resources that appear to have a prehistoric or ethnographic component. The monitor will be retained either directly by the Applicant or by the consultant conducting the actual fieldwork.

#### *5.3.4.7 Resources Recordation and Evaluation*

**CUL-8**: The archaeological monitor will follow accepted professional standards in recording any discovery and will submit applicable Department of Parks and Recreation forms to the Southern San Joaquin Valley Information Center (SSJVIC). If the discovery is deemed not significant by the CRS, construction activities may proceed. Should a potentially significant cultural resource be encountered during monitoring, evaluation of this resource to determine significance will be required. Significant cultural resources impacted by the Project will require additional mitigation, which may include data recovery. A recovery of a sample of the deposit from which the archaeologist can define scientific data to address archaeological research questions is considered an effective mitigation measure. A mitigation plan will be prepared and carried out by the CRS . The mitigation program will be carried out as quickly as possible to avoid construction delays. Construction may resume on site as soon as the field data collection phase of any data recovery program is completed.

#### *5.3.4.8 Provisions for Encountering Human Remains*

**CUL-9**: Human remains are anticipated with the Project given the presence of specific archaeological evidence encountered during the cultural inventory of the Project APE. If human remains are encountered, construction activities will be immediately halted in the immediate vicinity of the discovery. The Project supervisor will immediately contact the county coroner and the Applicant. If the remains are Native American, the NAHC will be contacted. The NAHC is required to determine the most likely descendant, notify that person or group, and request that they inspect the burial and make recommendations for treatment and removal.

#### *5.3.4.9 Laboratory Analysis and Curation*

**CUL-10**: Cultural material removed during the course of monitoring or other mitigation measures will be bagged and catalogued in the field, and analyzed in the laboratory. Cultural materials will be analyzed in order to characterize the resource(s) and their association to existing regional chronologies. The materials, and the contexts from which they were sampled, will also be evaluated with regard to the eligibility criteria for inclusions on the CRHR.

The objective of laboratory processing and analysis are to determine to the extent possible the date, function, cultural affiliation, and significance, of the archaeological sites, and to prepare artifacts for permanent curation. Artifacts will be processed (i.e., cleaned, catalogued, and analyzed) according to the Secretary of the Interior's Standards and Guidelines for curation (36 CFR 79). Artifacts will be gently washed using tap water and a soft brush. Delicate and unstable materials, such as decayed metal and organic material will be carefully dry brushed with a soft brush. After drying, artifacts will be analyzed, catalogued, and re-bagged according to provenance and type. Artifacts will have acid-free paper labels with full provenance information, including the state site number, catalog number, shovel test pit or test unit number, stratum, and date. All artifact information will be entered into a customized computer-based application.

All artifacts, monitoring logs, and photographs, are the property of the client and will be placed in appropriately labeled boxes for temporary storage at URS. As part of mitigation requirements, final curation will be at the California State University, Bakersfield Department of Anthropology and funded by the client.

### 5.3.5 Laws, Ordinances, Regulations, and Standards

The Project will be consistent with all applicable laws, ordinances, regulations, and standards (LORS). Any cultural resources potentially affected by the Project are subject to compliance with the provisions outlined in CEQA/CRHR. All applicable LORS are summarized in Table 5.3-6, Summary of LORS – Cultural Resources.

As the Project does not utilize federal funding; or cross or occupy federally-regulated land federal jurisdiction does not apply. Therefore, the National Environmental Protection Act (NEPA), National Historic Preservation Act (NHPA), or the Native American Graves Protection and Repatriation Act (NAGPRA), do not apply to this undertaking.

**Table 5.3-6**
**Summary of LORS – Cultural Resources**

| LORS | Requirements | Conformance Section | Administering Agency | Agency Contact |
|---|---|---|---|---|
| **State Jurisdiction** | | | | |
| The Warren-Alquist Act 1974, as amended | Requires cultural, historic, and aesthetic resources be taken into account in consideration of an Application for Certification. Requires that a portion of any such resources on public land be set aside for public access. | 5.3 | CEC | Dorothy Torres<br>Heritage Resource Analyst<br>California Energy Commission<br>Energy Facilities Siting Division Environmental Office<br>1516 9th Street, MS 40<br>Sacramento, CA 95814-5512<br>Phone: 916-654-4870<br>Fax: 916-651-8868<br>dtorres@energy.state.ca.us |

**Table 5.3-6**
**Summary of LORS – Cultural Resources**

| LORS | Requirements | Conformance Section | Administering Agency | Agency Contact |
|---|---|---|---|---|
| CEQA of 1970, as amended | Applies to discretionary projects causing a significant effect on the environment and a substantial adverse change in the significance of a historical or archaeological resource. | 5.3 | CEC | Dorothy Torres |
| California Public Resources Code § 5020-5029.5 | Establishes the criterion for the California Register of Historic Resources and creates the California Historic Landmarks Committee and authorizes the Department of Parks and Recreation to designate Registered Historical Landmarks and Registered Points of Historical Interest; establishes criteria for the protection and preservation of historic resources. | 5.3 | CEC; State Historic Preservation Office; Department of Parks and Recreation | Dorothy Torres; Milford Wayne Donaldson,, State Historic Preservation Officer California Department of Parks and Recreation Office of Historic Preservation 1416 9th Street, Room 1442, Sacramento, CA 95814 P.O. Box 942896 Sacramento, CA 94296-0001 |
| Senate Bill 922 (Ducheny 2005) | Exempts from California Public Records Act Native American graves, cemeteries, archaeological site information, and sacred places in the possession of the Native American Heritage Commission and other state or local agencies. | 5.3 | CEC; Native American Heritage Commission | Dorothy Torres; Dave Singleton, Native American Heritage Commission Executive Secretary 915 Capitol Mall, Room 364 Sacramento, CA 95814 Phone: 916-653-4082 nahc@pacbell.net |
| Senate Bill 18 (Burton 2004) | Protection and preservation of Native American Traditional Cultural Places during city and county general plan development. | N/A | CEC; County of Kern; Native American Heritage Commission | Dorothy Torres |
| Senate Concurrent Resolution Number 87 (1994) | Provides for the identification and protection of traditional Native American resource gathering sites on state land. | N/A | CEC | Dorothy Torres |
| Administrative Code, Title 14, § 4307 | No person shall remove, injure, deface, or destroy any object of paleontological, archaeological, or historical interest or value. | 5.3.4 | CEC | Dorothy Torres |

**Table 5.3-6**
**Summary of LORS – Cultural Resources**

| LORS | Requirements | Conformance Section | Administering Agency | Agency Contact |
|---|---|---|---|---|
| Government Code, § 6253, § 6254, § 6254.10 | Disclosure of archaeological site information is not required for records that relate to archaeological site information maintained by the Department of Parks and Recreation, the State Historical Resources Commission, or the State Lands Commission. | 5.3 | CEC | Dorothy Torres |
| Health and Safety Code, § 7050.5 | Requires construction or excavation to be stopped near human remains until a coroner determines whether the remains are Native American; requires the coroner to contact the NAHC if the remains are Native American. | 5.3.4 | CEC; County Coroner | Dorothy Torres; Coroner/ Public Administrator Division<br>Jim Malouf, Chief Deputy Coroner<br>1832 Flower Street<br>Bakersfield, CA<br>Phone: 661-868-0100<br>Fax: 661-868-0149 |
| Health and Safety Code, § 7051 | Establishes removal of human remains from interment, or from a place of storage while awaiting interment or cremation, with the intent to sell them or to dissect them with malice or wantonness as a public offense punishable by imprisonment in a state prison. | 5.3.4 | CEC; County Coroner | Dorothy Torres; Jim Malouf, Chief Deputy Coroner |
| Health and Safety Code, § 7052 | States that willing mutilation of, disinterment of, removal from a place of disinterment of, and sexual penetration of or sexual contact with any remains known to be human are felony offenses. | 5.3.4 | CEC; County Coroner | Dorothy Torres; Jim Malouf, Chief Deputy Coroner |
| Penal Code, Title 14, § 622.5 | Misdemeanor offense for any person, other than the owner, who willfully damages or destroys archaeological or historic features on public or privately owned land. | 5.3.4 | CEC | Dorothy Torres |
| Public Resources Code 5097-5097.6 | Provides guidance for state agencies in the management of archaeological, paleontological, and historical sites affected by major public works project on state land. | 5.3 | CEC | Dorothy Torres |

**Table 5.3-6**
**Summary of LORS – Cultural Resources**

| LORS | Requirements | Conformance Section | Administering Agency | Agency Contact |
|---|---|---|---|---|
| Public Resources Code 5097.9-5097.991 | Establishes regulations for the protection of Native American religious places; establishes the Native American Heritage commission; California Native American Remains and Associated Grave artifacts shall be repatriated; notification of discovery of Native American human remains to a most likely descendent. | 5.3 | CEC; State Historic Preservation Office; Tribal Historic Preservation Office; Native American Heritage Commission | Dorothy Torres; Tejon Indian Tribe Ken Morgan, Assistant Project Manager 2234 4th Street Wasco, CA 93280 Phone: 661-758-2303, Fax: 661-758-9385 Toll Free: 800-790-3398 email: kmorgan@bak.rr.com |
| CCR § 1427 | Recognizes that California's archaeological resources are endangered by urban development; the Legislature finds that these resources need preserving; it is a misdemeanor to alter any archaeological evidence found in any cave, or to remove any materials from a cave. | 5.3 | CEC | Dorothy Torres |
| Senate Concurrent Resolution Number 43 | Requires all state agencies to cooperate with programs of archaeological survey and excavation, and to preserve known archaeological resources whenever reasonable. | 5.3 | CEC | Dorothy Torres |
| Penal Code, Title 14, § 622.5 | Misdemeanor offense for any person, other than the owner, who willfully damages or destroys archaeological or historic features on public or privately owned land. | 5.3 | CEC | Dorothy Torres |
| **Local Jurisdiction** | | | | |
| Kern County General Plan | The County shall address archaeological resources for discretionary projects in accordance with CEQA. | 5.3 | Kern County Planning Department | |

Source: URS Corporation, 2008.
Notes:
CCR = California Code of Regulations
CEC = California Energy Commission
CEQA = California Environmental Quality Act
LORS = laws, ordinances, regulations, and standards
N/A = not applicable
NAHC = Native American Heritage Commission

### 5.3.6 Involved Agencies and Agency Contacts

Agencies with jurisdiction to issue applicable permits and/or enforce LORS related to cultural resources are shown in Table 5.3-7, Agency Contact List for LORS.

**Table 5.3-7**
**Agency Contact List for LORS**

| Agency | Contact | Address | Telephone |
|---|---|---|---|
| **CEC** | Dorothy Torres<br>Heritage Resource Analyst<br>California Energy Commission<br>Energy Facilities Siting Division<br>Environmental Office | 1516 9th Street,<br>MS 40<br>Sacramento, CA 95814-5512 | 916-654-4870 |

### 5.3.7 Permits Required and Permit Schedule

No permits are required for cultural resources for the Project.

### 5.3.8 References

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Moratto, M.J. 1984. *California Archaeology*. Academic Press, Orlando.

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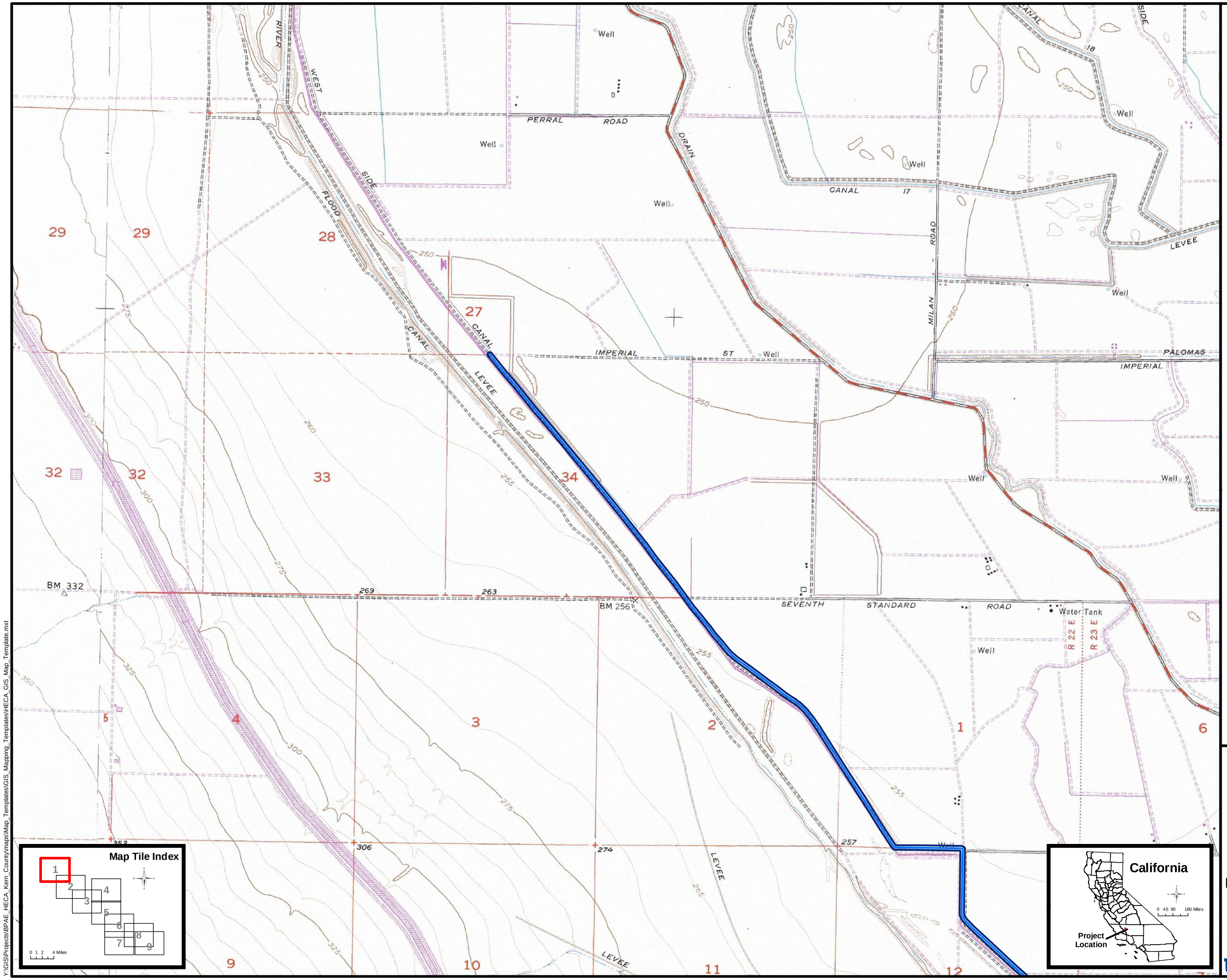


Project Site
Site Access Road
CO2
Natural Gas (NG)
Potable Water
Process Water
Potable Water/NG
Process & Potable Water/NG
Transmission
Transmission/CO2
200-Foot Radius of Project Site
50-Foot Radius of Project Linears

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Sources:
USGS (7.5' quads: Belridge 1976, Lokern 1976, Buttonwillow 1976, West Elk Hills 1976, East Elk Hills 1977, Taft 1977, Tupman 1977, Buena Vista Lake Bed 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved.

# Cultural Resource Inventory Area

## Sheet 1 of 9

**Hydrogen Energy California (HECA)**

## FIGURE 5.3-1

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Project Site
Site Access Road
CO2
Natural Gas (NG)
Potable Water
Process Water
Potable Water/NG
Process & Potable Water/NG
Transmission
Transmission/CO2
200-Foot Radius of Project Site
50-Foot Radius of Project Linears

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# Cultural Resource Inventory Area

## Sheet 2 of 9

**Hydrogen Energy California (HECA)**

**FIGURE 5.3-1**

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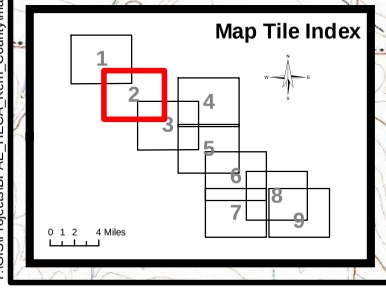


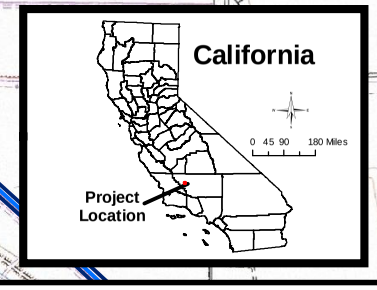


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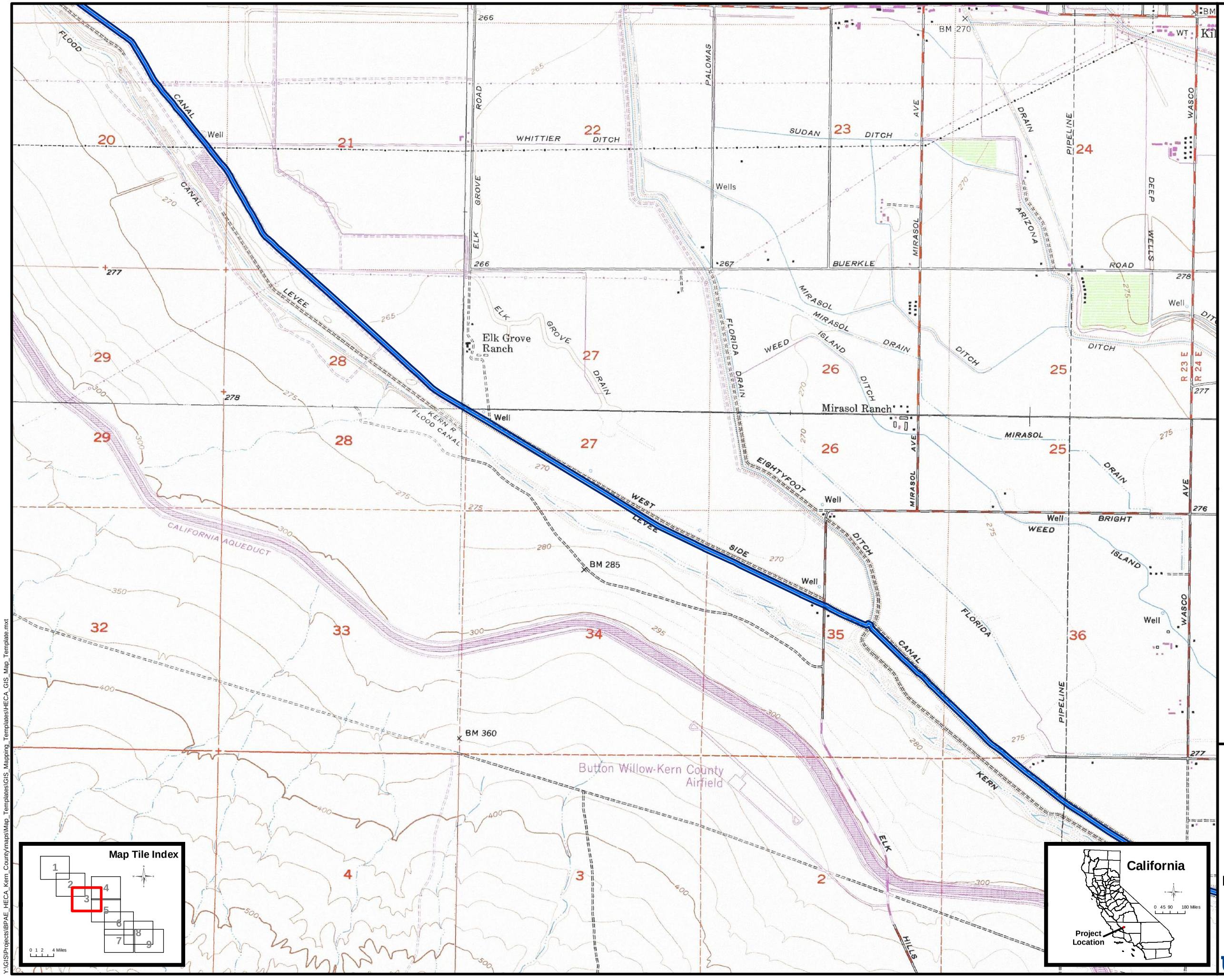


# Cultural Resource Inventory Area

## Sheet 3 of 9

**Hydrogen Energy California (HECA)**

**FIGURE 5.3-1**

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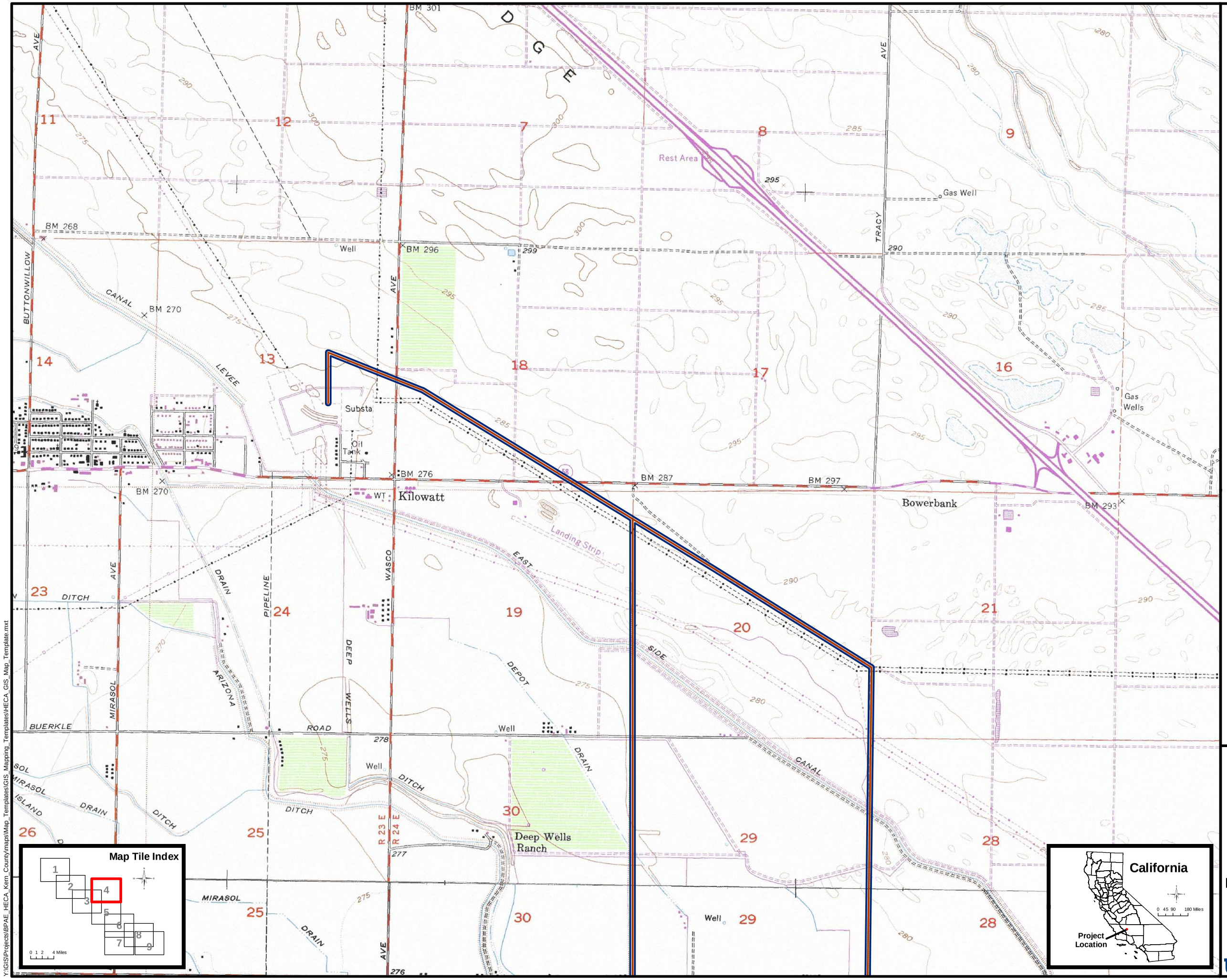


Project Site
Site Access Road
CO2
Natural Gas (NG)
Potable Water
Process Water
Potable Water/NG
Process & Potable Water/NG
Transmission
Transmission/CO2
200-Foot Radius of Project Site
50-Foot Radius of Project Linears

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Sources:
USGS (7.5' quads: Belridge 1976, Lokern 1976, Buttonwillow 1976, West Elk Hills 1976, East Elk Hills 1977, Taft 1977, Tupman 1977, Buena Vista Lake Bed 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved.

# Cultural Resource Inventory Area

## Sheet 4 of 9

**Hydrogen Energy California (HECA)**

**FIGURE 5.3-1**

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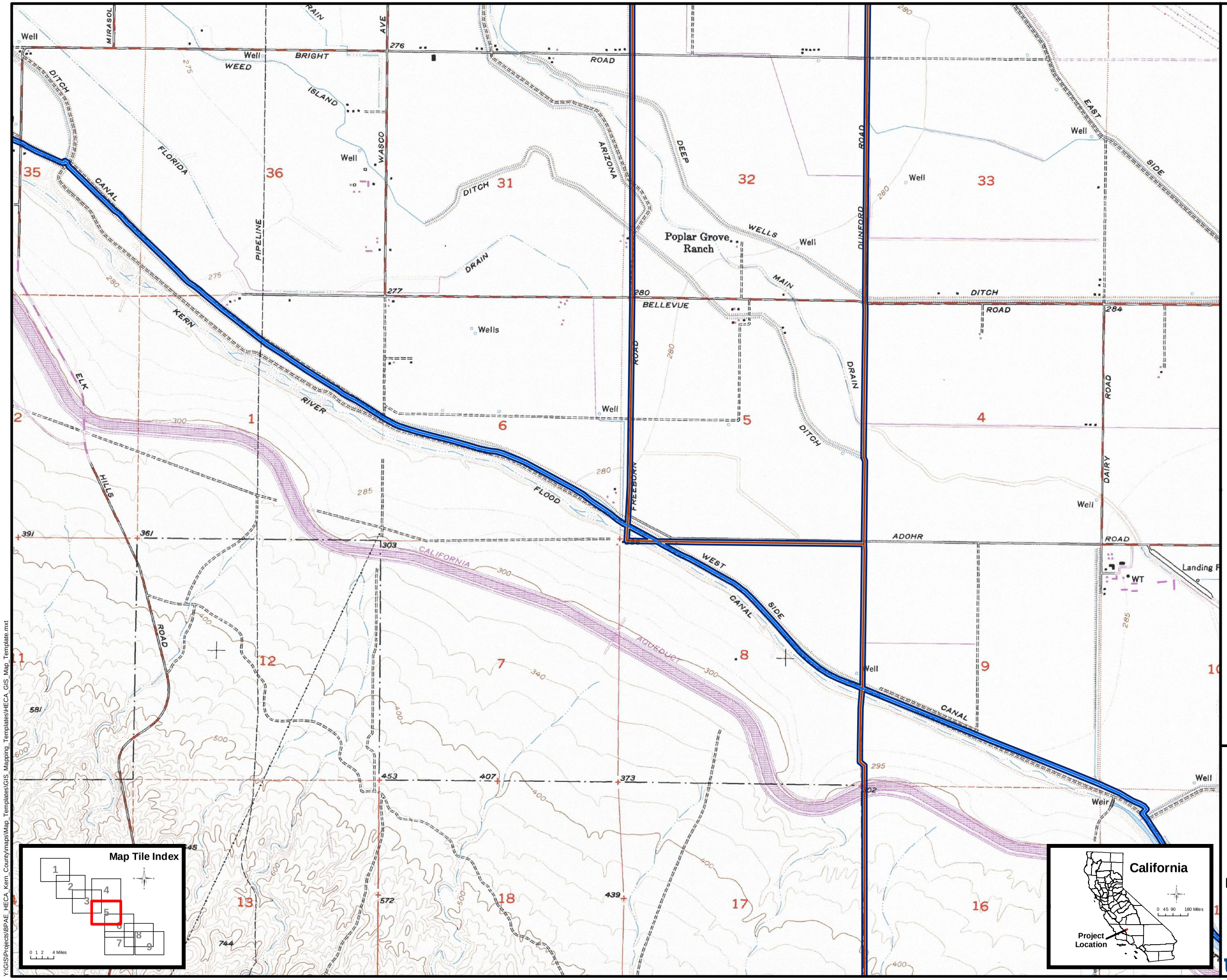


Project Site
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# Cultural Resource Inventory Area

## Sheet 5 of 9

**Hydrogen Energy California (HECA)**

## FIGURE 5.3-1

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Project Site
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Transmission
Transmission/CO2
200-Foot Radius of Project Site
50-Foot Radius of Project Linears

0 1,000 2,000 4,000 Feet

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# Cultural Resource Inventory Area

## Sheet 6 of 9

**Hydrogen Energy California (HECA)**

**FIGURE 5.3-1**

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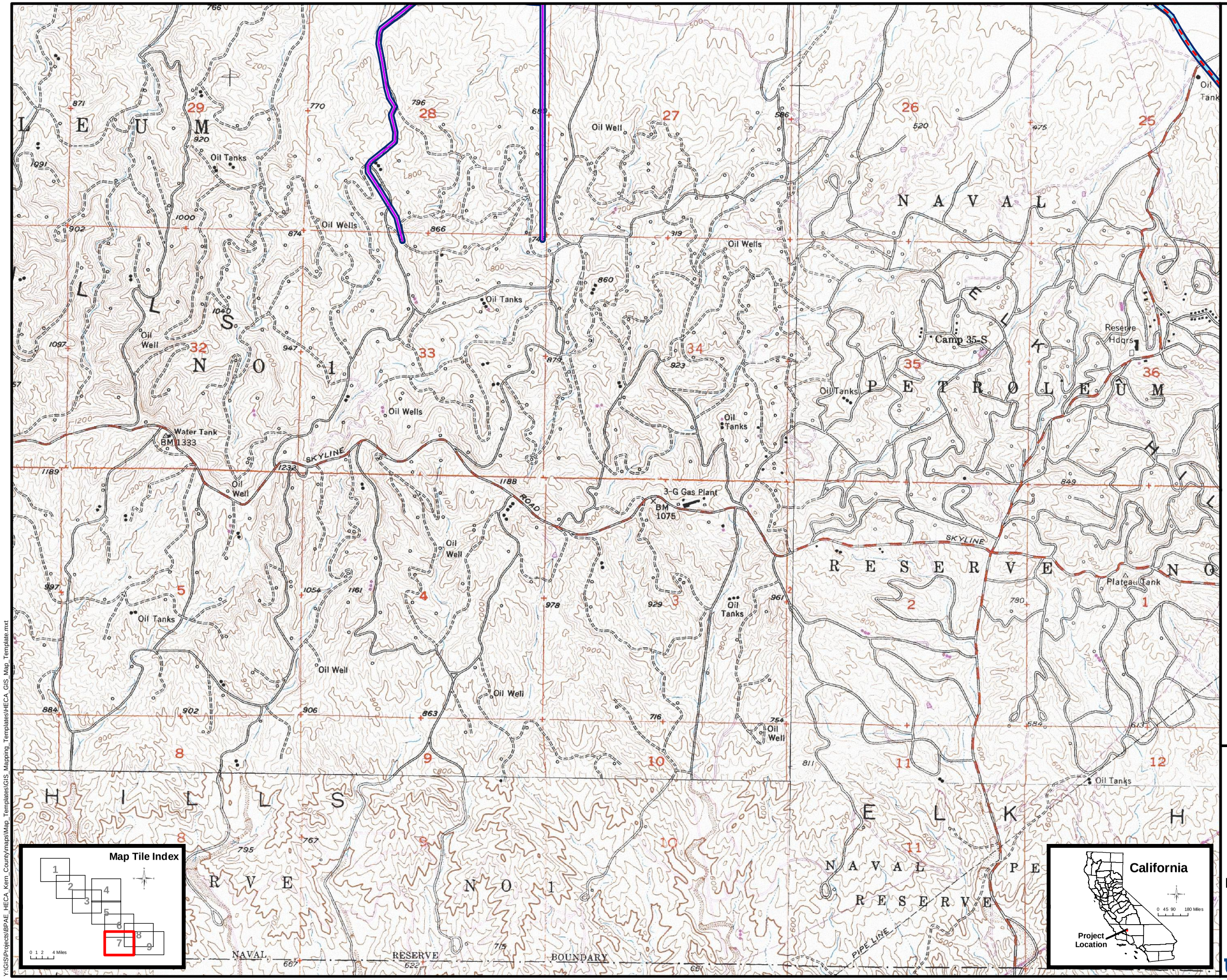


Project Site
Site Access Road
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Potable Water/NG
Process & Potable Water/NG
Transmission
Transmission/CO2
200-Foot Radius of Project Site
50-Foot Radius of Project Linears

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# Cultural Resource Inventory Area

## Sheet 7 of 9

**Hydrogen Energy California (HECA)**

**FIGURE 5.3-1**

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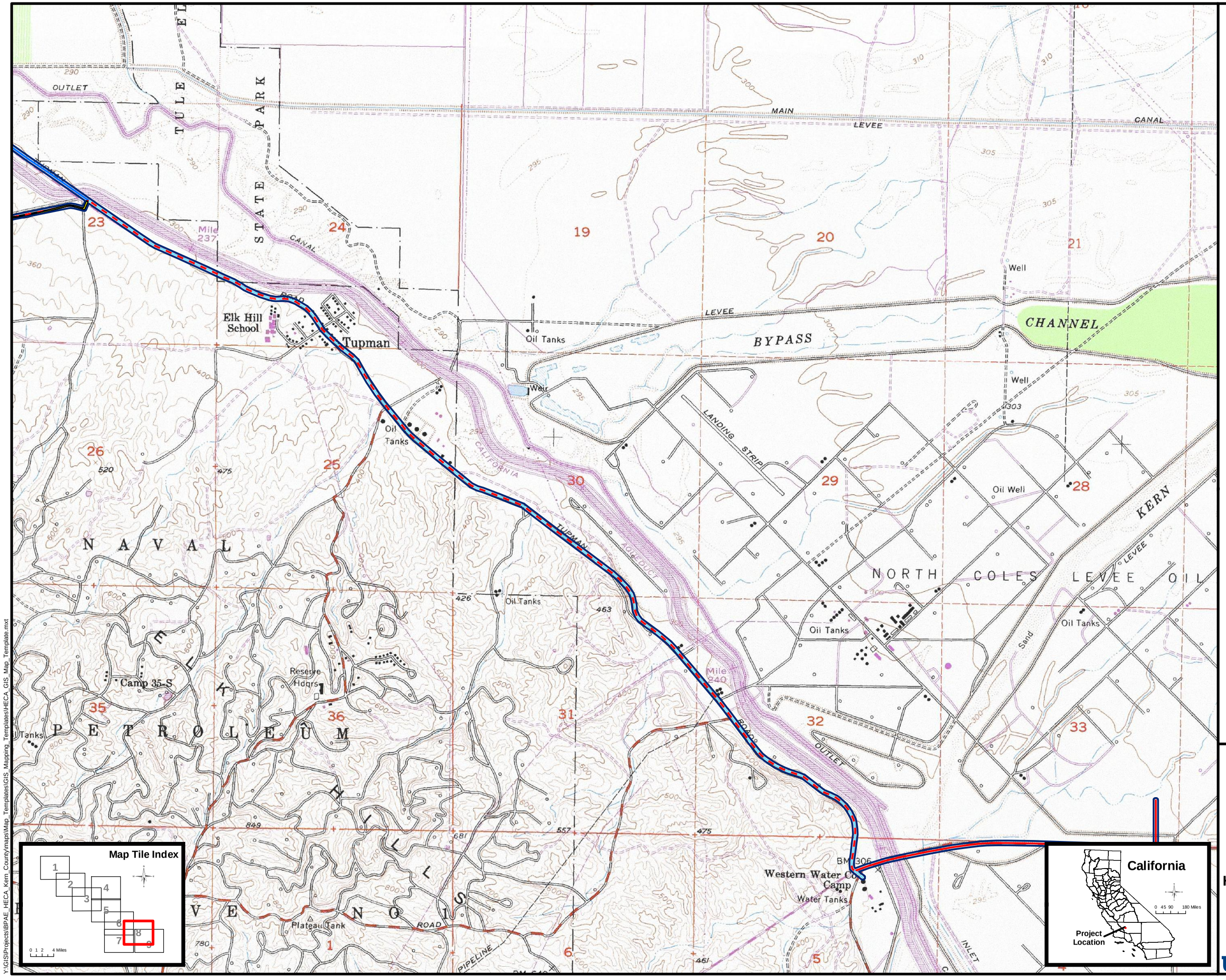


# Cultural Resource Inventory Area

## Sheet 8 of 9

**Hydrogen Energy California (HECA)**

**FIGURE 5.3-1**

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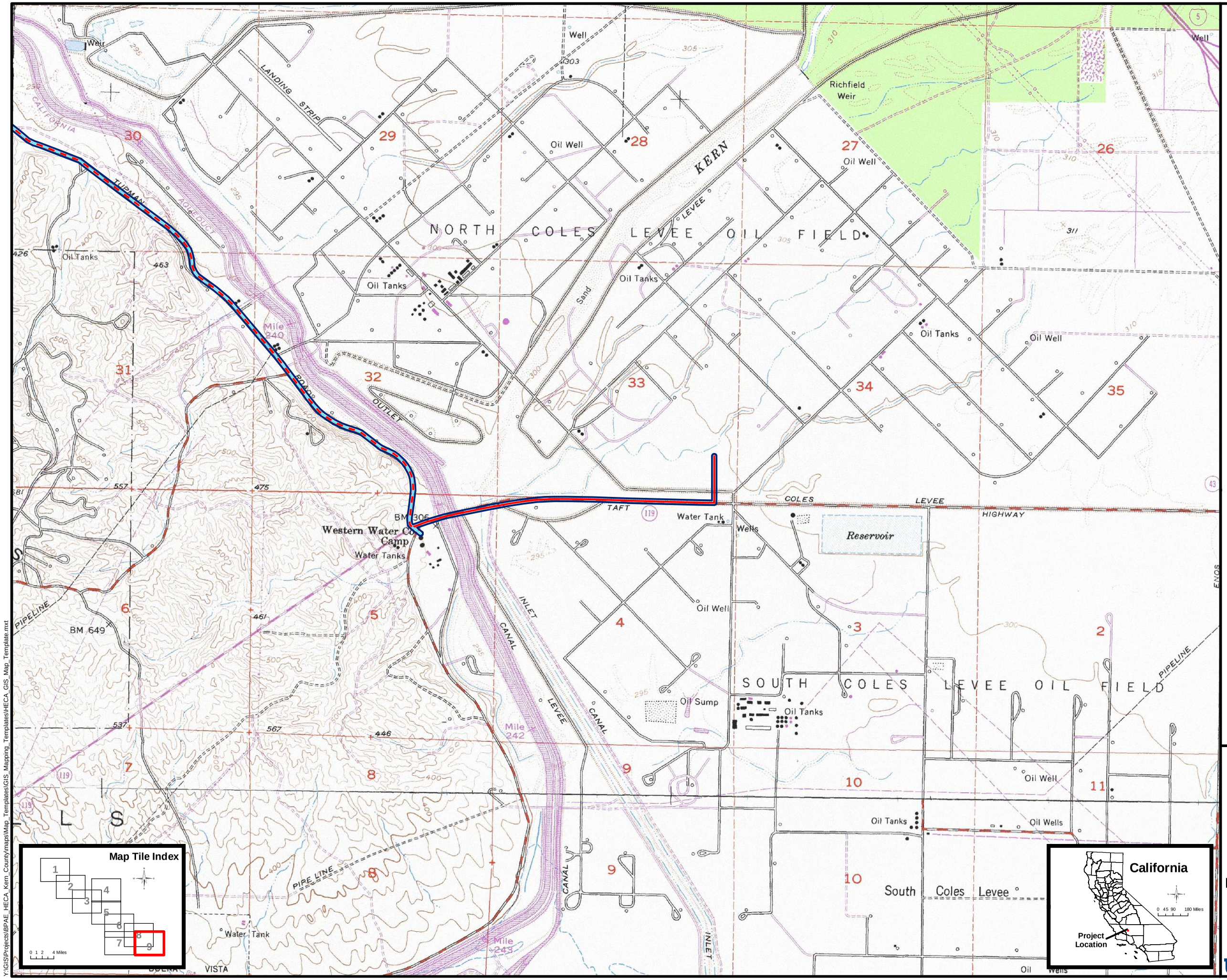


Project Site
Site Access Road
CO2
Natural Gas (NG)
Potable Water
Process Water
Potable Water/NG
Process & Potable Water/NG
Transmission
Transmission/CO2
200-Foot Radius of Project Site
50-Foot Radius of Project Linears

N
W
E
S

0 1,000 2,000 4,000 Feet

Sources:
USGS (7.5' quads: Belridge 1976, Lokern 1976, Buttonwillow 1976, West Elk Hills 1976, East Elk Hills 1977, Taft 1977, Tupman 1977, Buena Vista Lake Bed 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved.

# Cultural Resource Inventory Area

## Sheet 9 of 9

**Hydrogen Energy California (HECA)**

**FIGURE 5.3-1**

URS

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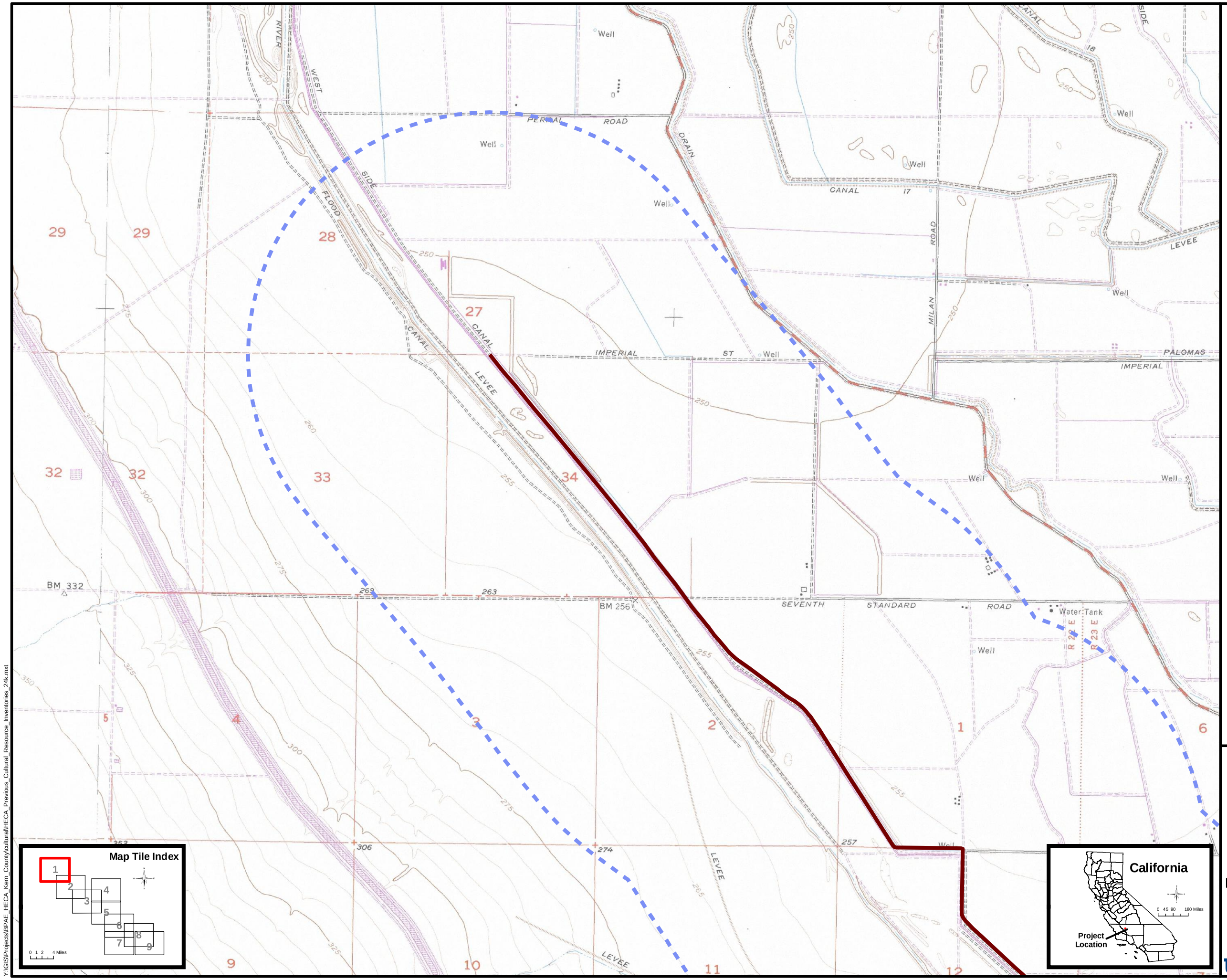


Project Site
Site Access Road
Linear Facilities
1-Mile Radius of Project Site
1-Mile Radius of Project Linears
Existing Linear-Based Surveys
Previous Area-Based Surveys

N
W E
S

0 1,000 2,000 4,000 Feet

Sources:
USGS (7.5' quads: Belridge 1976, Lokern 1976, Buttonwillow 1976, West Elk Hills 1976, East Elk Hills 1977, Taft 1977, Tupman 1977, Buena Vista Lake Bed 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved.
Cultural data from Southern San Joaquin Archaeological Information Center, Bakersfield, CA.

Note: All surveys are preceded by "CA-KER-".

# Previous Cultural Resource Inventories

## Sheet 1 of 9

**Hydrogen Energy California (HECA)**

**FIGURE 5.3-2**

URS

Created July, 2008

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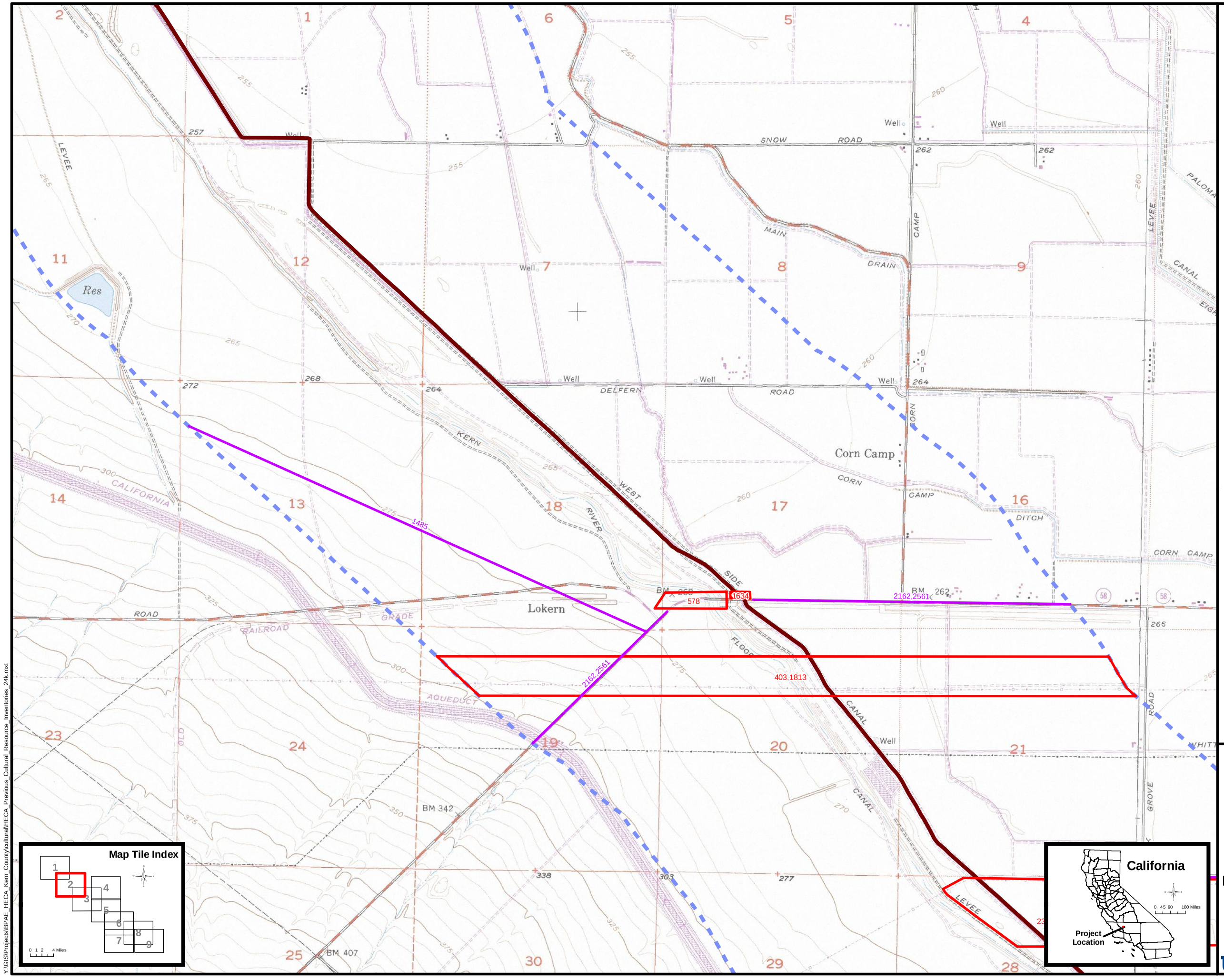


## Project Site
## Site Access Road
## Linear Facilities
## 1-Mile Radius of Project Site
## 1-Mile Radius of Project Linears
## Existing Linear-Based Surveys
## Previous Area-Based Surveys

0 1,000 2,000 4,000 Feet

Sources:
USGS (7.5' quads: Belridge 1976, Lokern 1976, Buttonwillow 1976, West Elk Hills 1976, East Elk Hills 1977, Taft 1977, Tupman 1977, Buena Vista Lake Bed 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved.
Cultural data from Southern San Joaquin Archaeological Information Center, Bakersfield, CA.

Note: All surveys are preceded by "CA-KER-".

# Previous Cultural Resource Inventories

## Sheet 2 of 9

## Hydrogen Energy California (HECA)

## FIGURE 5.3-2

URS

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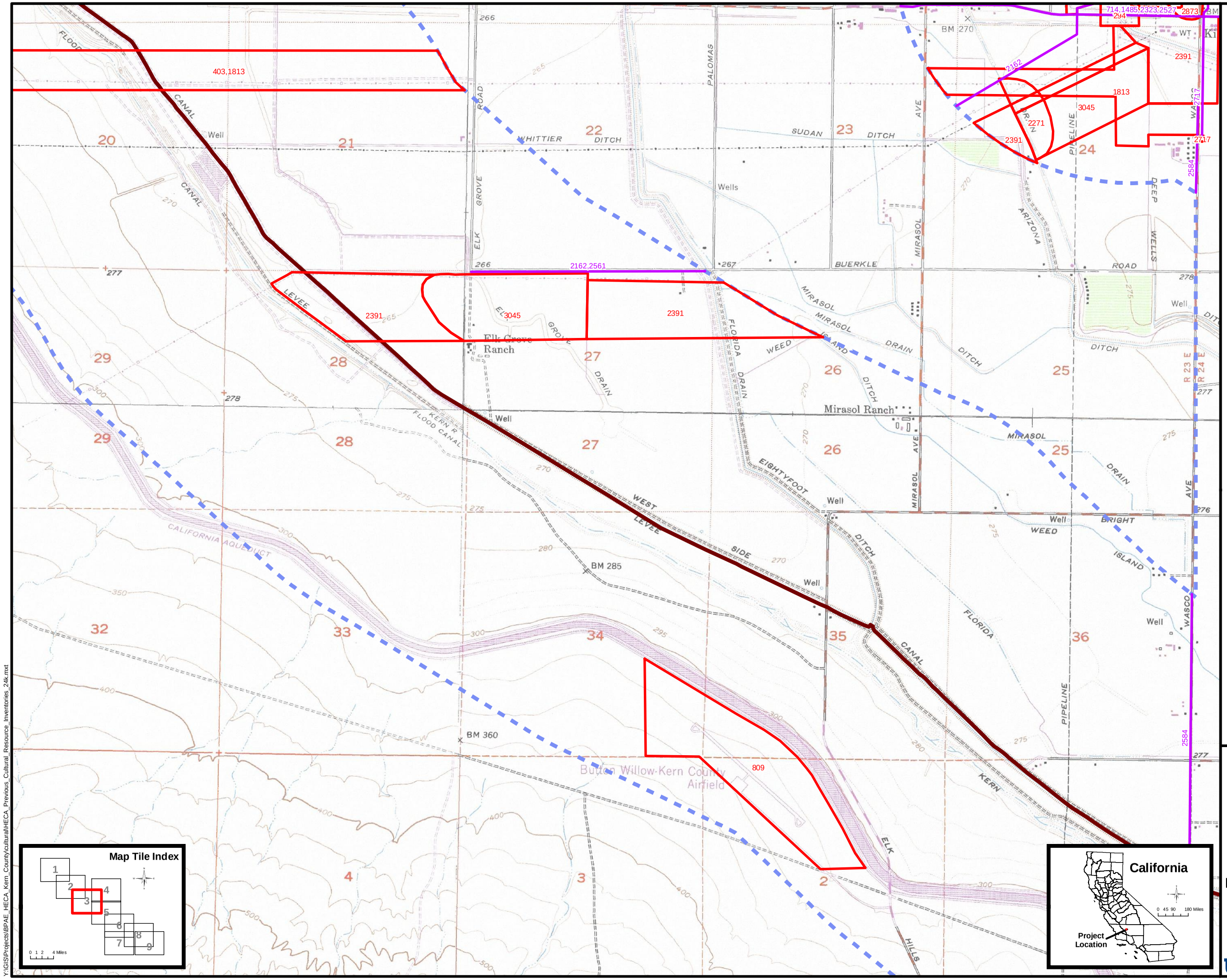






Project Site
Site Access Road
Linear Facilities
1-Mile Radius of Project Site
1-Mile Radius of Project Linears
Existing Linear-Based Surveys
Previous Area-Based Surveys

0 1,000 2,000 4,000 Feet

Sources:
USGS (7.5' quads: Belridge 1976, Lokern 1976, Buttonwillow 1976, West Elk Hills 1976, East Elk Hills 1977, Taft 1977, Tupman 1977, Buena Vista Lake Bed 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved.
Cultural data from Southern San Joaquin Archaeological Information Center, Bakersfield, CA.

Note: All surveys are preceded by "CA-KER-".

# Previous Cultural Resource Inventories

## Sheet 3 of 9

**Hydrogen Energy California (HECA)**

## FIGURE 5.3-2

URS

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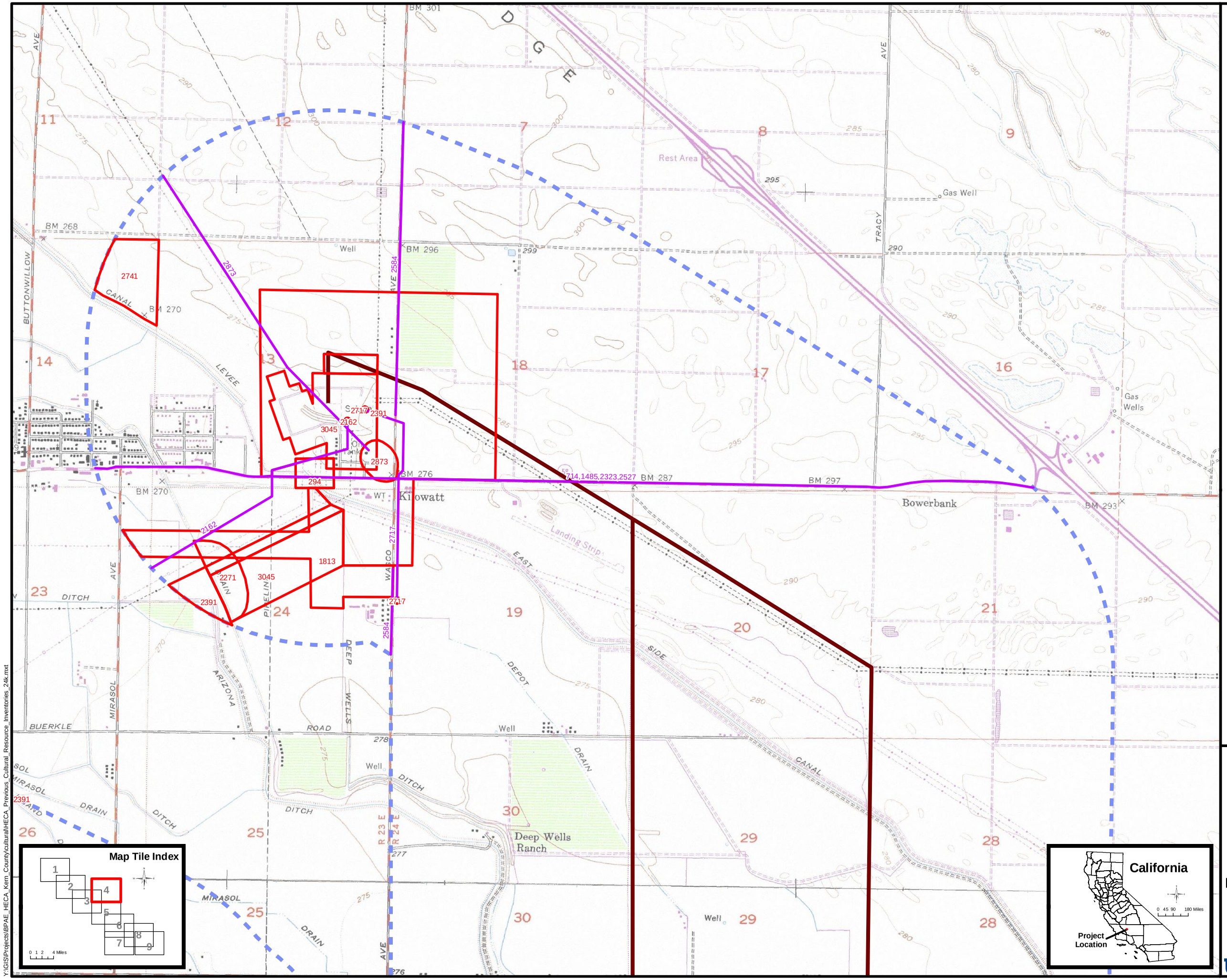


Sources:
USGS (7.5' quads: Belridge 1976, Lokern 1976, Buttonwillow 1976, West Elk Hills 1976, East Elk Hills 1977, Taft 1977, Tupman 1977, Buena Vista Lake Bed 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved.
Cultural data from Southern San Joaquin Archaeological Information Center, Bakersfield, CA.

Note: All surveys are preceded by "CA-KER-".

# Previous Cultural Resource Inventories

## Sheet 4 of 9

**Hydrogen Energy California (HECA)**

**FIGURE 5.3-2**

URS

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Project Site
Site Access Road
Linear Facilities
1-Mile Radius of Project Site
1-Mile Radius of Project Linears
Existing Linear-Based Surveys
Previous Area-Based Surveys

N
W E
S

0 1,000 2,000 4,000 Feet

Sources:
USGS (7.5' quads: Belridge 1976, Lokern 1976, Buttonwillow 1976, West Elk Hills 1976, East Elk Hills 1977, Taft 1977, Tupman 1977, Buena Vista Lake Bed 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved.
Cultural data from Southern San Joaquin Archaeological Information Center, Bakersfield, CA.

Note: All surveys are preceded by "CA-KER-".

# Previous Cultural Resource Inventories

## Sheet 5 of 9

**Hydrogen Energy California (HECA)**

**FIGURE 5.3-2**

URS

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Map Tile Index
1 2 3 4 5 6 7 8 9
0 1 2 4 Miles

California
0 45 90 180 Miles
Project Location

924,2269,3503,3508,3509
2268,2375
924,2269,3503,3508,3509
2268,2375
924,2269,3503,3508,3509
924,2269,3503,3508,3509
2268,2375
924,2269,3503,3508,3509
1892
809
3504

Poplar Grove Ranch

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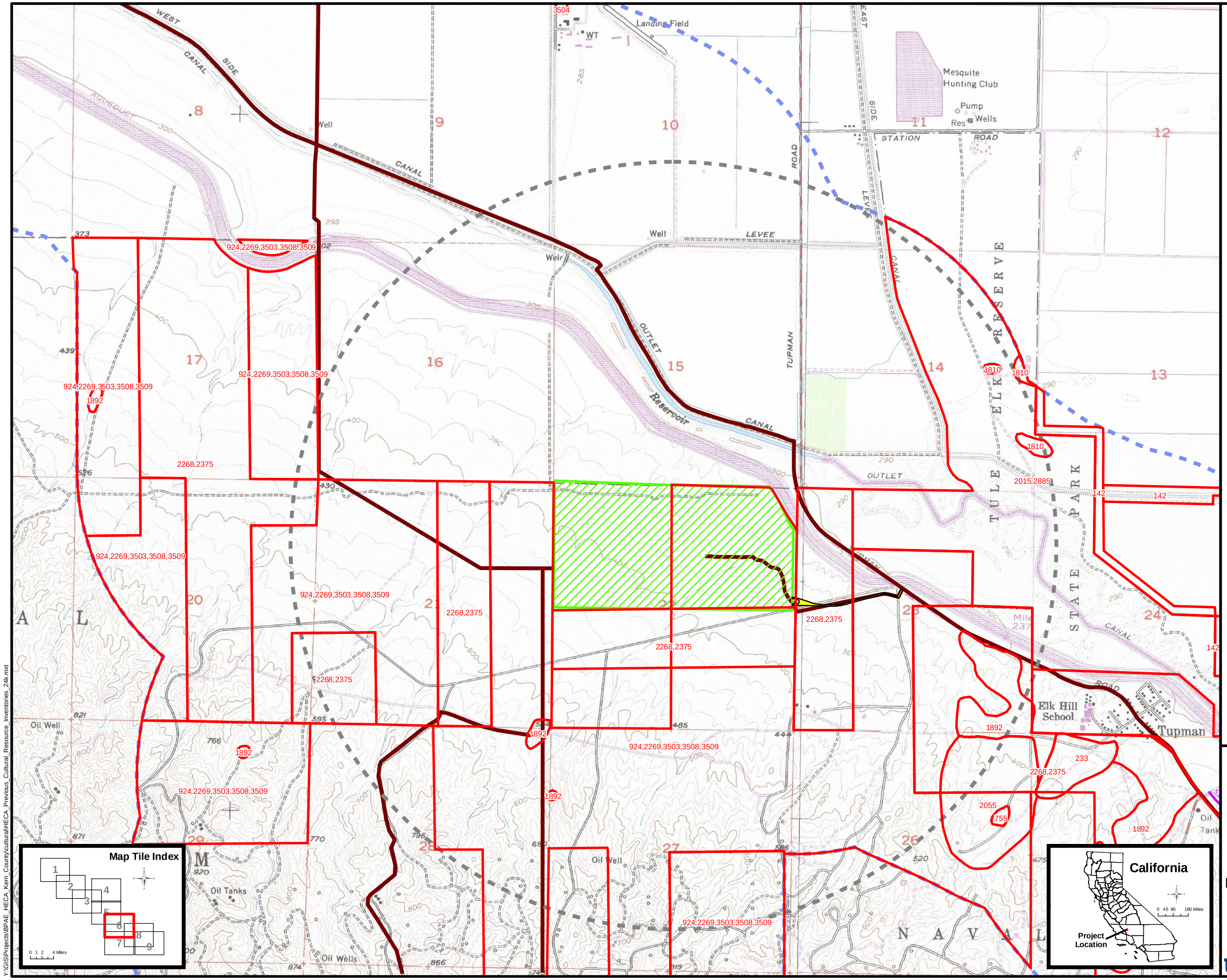



Sources:
USGS (7.5' quads: Belridge 1976, Lokern 1976, Buttonwillow 1976, West Elk Hills 1976, East Elk Hills 1977, Taft 1977, Tupman 1977, Buena Vista Lake Bed 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved.
Cultural data from Southern San Joaquin Archaeological Information Center, Bakersfield, CA.

Note: All surveys are preceded by "CA-KER-".

# Previous Cultural Resource Inventories

## Sheet 6 of 9

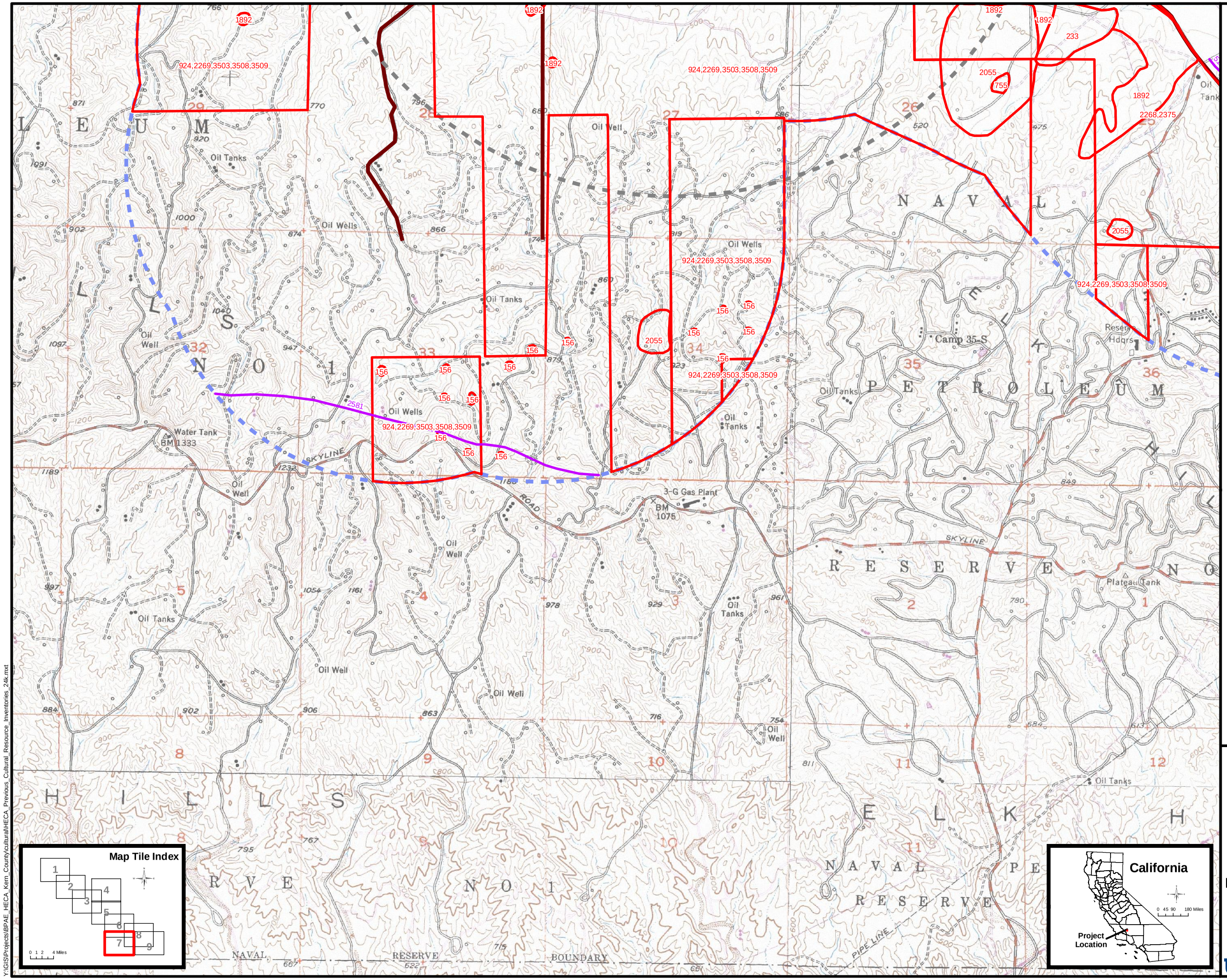
**Hydrogen Energy California (HECA)**

**FIGURE 5.3-2**

URS

Created July, 2008

Y:\GIS\Projects\BPAE_HECA_Kern_County\cultural\HECA_Previous_Cultural_Resource_Inventories_24k.mxt




Project Site
Site Access Road
Linear Facilities
1-Mile Radius of Project Site
1-Mile Radius of Project Linears
Existing Linear-Based Surveys
Previous Area-Based Surveys

Sources:
USGS (7.5' quads: Belridge 1976, Lokern 1976, Buttonwillow 1976, West Elk Hills 1976, East Elk Hills 1977, Taft 1977, Tupman 1977, Buena Vista Lake Bed 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved.
Cultural data from Southern San Joaquin Archaeological Information Center, Bakersfield, CA.

Note: All surveys are preceded by "CA-KER-".

# Previous Cultural Resource Inventories

## Sheet 7 of 9

**Hydrogen Energy California (HECA)**

## FIGURE 5.3-2

URS

Created July, 2008

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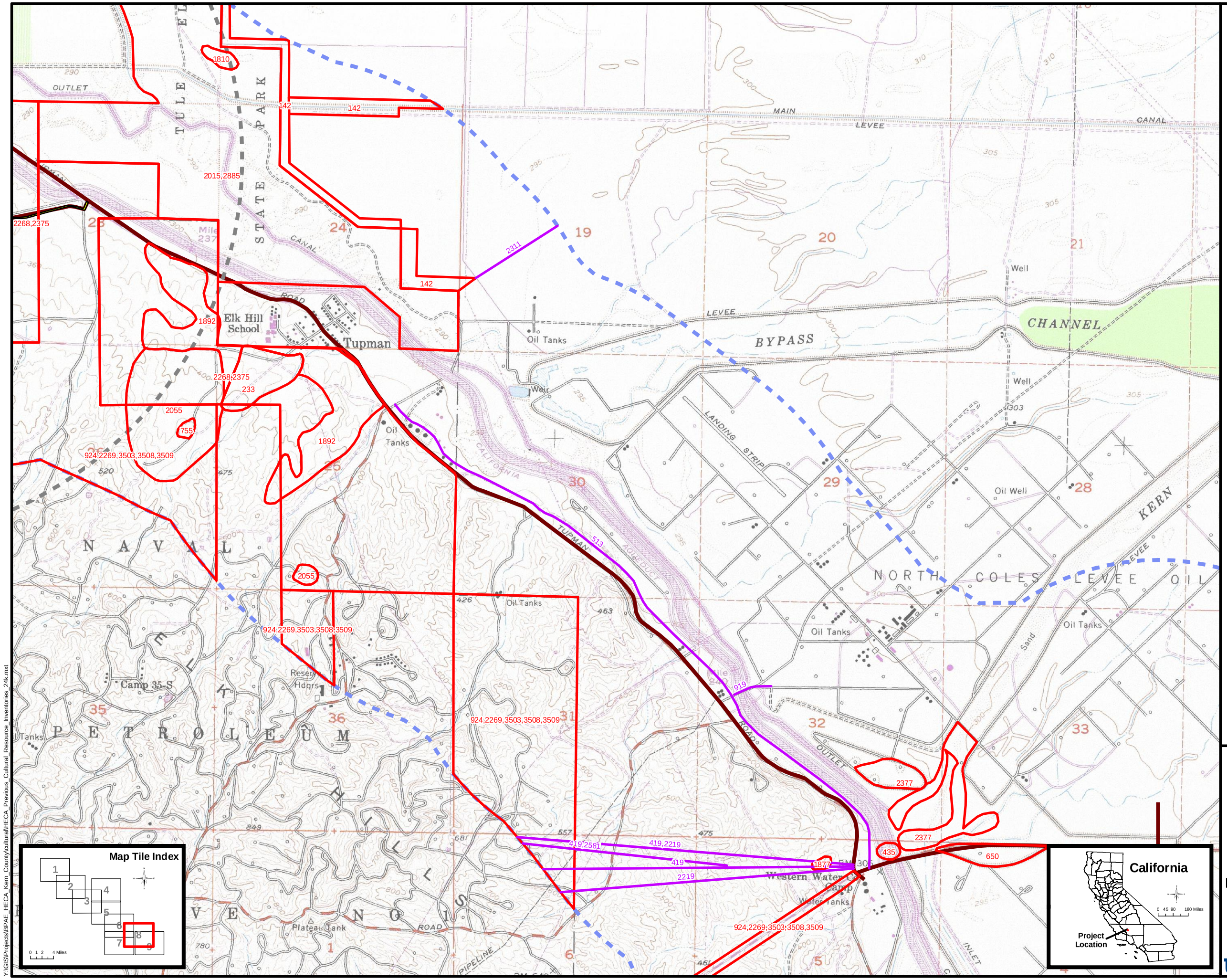


# Previous Cultural Resource Inventories

## Sheet 8 of 9

**Hydrogen Energy California (HECA)**

**FIGURE 5.3-2**

URS

Created July, 2008

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2015,2885

924,2269,3503,3508,3509

924,2269,3503,3508,3509

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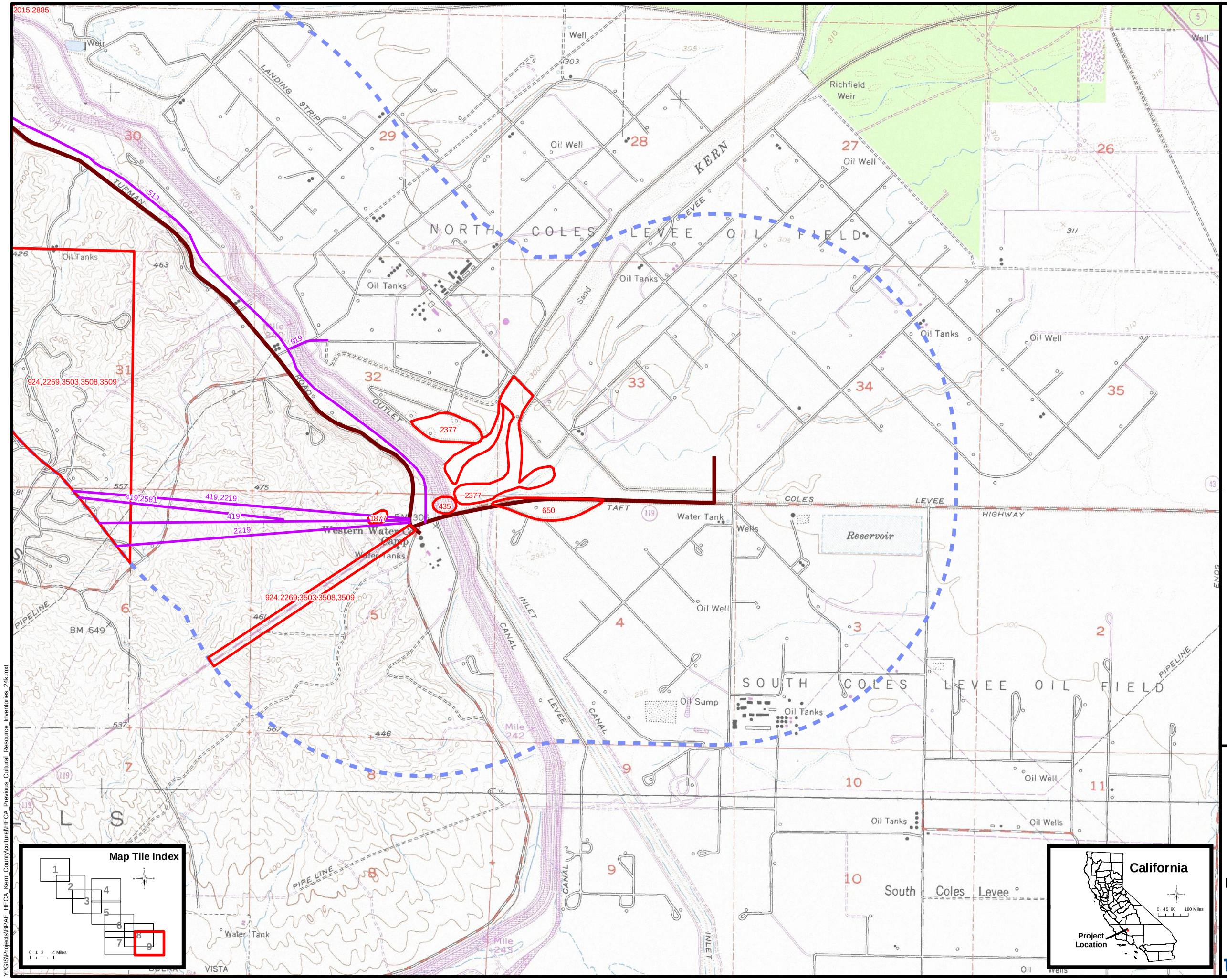


Project Site
Site Access Road
Linear Facilities
1-Mile Radius of Project Site
1-Mile Radius of Project Linears
Existing Linear-Based Surveys
Previous Area-Based Surveys

N
W E
S

0 1,000 2,000 4,000 Feet

Sources:
USGS (7.5' quads: Belridge 1976, Lokern 1976, Buttonwillow 1976, West Elk Hills 1976, East Elk Hills 1977, Taft 1977, Tupman 1977, Buena Vista Lake Bed 1977). Created using TOPO!, ©2006 National Geographic Maps, All Rights Reserved.
Cultural data from Southern San Joaquin Archaeological Information Center, Bakersfield, CA.

Note: All surveys are preceded by "CA-KER-".

# Previous Cultural Resource Inventories

## Sheet 9 of 9

**Hydrogen Energy California (HECA)**

**FIGURE 5.3-2**

URS

Created July, 2008

Adequacy Issue: Adequate ____ Inadequate ____ **DATA ADEQUACY WORKSHEET** Revision No. 0 Date ____

Technical Area: **Cultural Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

| SITING REGULATIONS | INFORMATION | AFC PAGE NUMBER AND SECTION NUMBER | ADEQUATE YES OR NO | INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS |
|---|---|---|---|---|
| Appendix B<br>(g) (1) | ...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation. | Section 5.3.1<br>Section 5.3.2<br>Section 5.3.3<br>Section 5.3.4 | | |
| Appendix B<br>(g) (2) (A) | A summary of the ethnology, prehistory, and history of the region with emphasis on the area within no more than a 5-mile radius of the project location. | Section 5.3.1.1 | | |
| Appendix B<br>(g) (2) (B) | The results of a literature search to identify cultural resources within an area not less than a 1-mile radius around the project site and not less that than one-quarter (0.25) mile on each side of the linear facilities. Identify any cultural resources listed pursuant to ordinance by a city or county, or recognized by any local historical or archaeological society or museum. Literature searches to identify the above cultural resources must be completed by, or under the direction of, individuals who meet the Secretary of the Interior's Professional Standards for the technical area addressed.<br>Copies of California Department of Parks and Recreation (DPR) 523 forms (Title 14 CCR §4853) shall be provided for all cultural resources (ethnographic, architectural, historical, and archaeological) identified in the literature search as being 45 years or older or of exceptional importance as defined in the | Section 5.3.1.7<br>Appendix H | | |

Adequacy Issue: Adequate ____ Inadequate ____ **DATA ADEQUACY WORKSHEET** Revision No. 0 Date ____

Technical Area: **Cultural Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

| SITING REGULATIONS | INFORMATION | AFC PAGE NUMBER AND SECTION NUMBER | ADEQUATE YES OR NO | INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS |
|---|---|---|---|---|
| | National Register Bulletin Guidelines, (36CFR60.4(g)). A copy of the USGS 7.5' quadrangle map of the literature search area delineating the areas of all past surveys and noting the California Historical Resources Information System (CHRIS) identifying number shall be provided. Copies also shall be provided of all technical reports whose survey coverage is wholly or partly within .25 mile of the area surveyed for the project under Section (g)(2)(C), or which report on any archaeological excavations or architectural surveys within the literature search area. | | | |
| Appendix B<br>(g) (2) (C) | The results of new surveys or surveys less than 5 years old shall be provided if survey records of the area potentially affected by the project are more than five (5) years old. Surveys to identify new cultural resources must be completed by (or under the direction of) individuals who meet the Secretary of the Interior's Professional Standards for the technical area addressed.<br>New pedestrian archaeological surveys shall be conducted inclusive of the project site and project linear facility routes, extending to no less than 200' around the project site, substations and staging areas, and to no less than 50' to either side of the right-of-way of project linear facility routes. New historic architecture field surveys in rural areas shall be conducted inclusive of the project site and the project linear facility routes, extending no less than 0.5 mile out from the proposed plant site and from | Section 5.3.1.8<br>Appendix H | | |

Adequacy Issue: Adequate ____ Inadequate ____ **DATA ADEQUACY WORKSHEET** Revision No. 0 Date ____

Technical Area: **Cultural Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

| SITING REGULATIONS | INFORMATION | AFC PAGE NUMBER AND SECTION NUMBER | ADEQUATE YES OR NO | INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS |
|---|---|---|---|---|
| | the routes of all above-ground linear facilities. New historic architecture field surveys in urban and suburban areas shall be conducted inclusive of the project site, extending no less than one parcel's distance from all proposed plant site boundaries. New historic architecture field reconnaissance ("windshield survey") in urban and suburban areas shall be conducted along the routes of all linear facilities to identify, inventory, and characterize structures and districts that appear to be older than 45 years or that are exceptionally significant, whatever their age.<br>A technical report of the results of the new surveys, conforming to the Archaeological Resource Management Report format (CA Office of Historic Preservation Feb 1990), which is incorporated by reference, shall be separately provided and submitted (under confidential cover if archaeological site locations are included). | | | |
| Appendix B<br>(g) (2) (C) cont. | Information included in the technical report shall also be provided in the Application for Certification, except that confidential information (archaeological sites or areas of religious significance) shall be submitted under a request for confidentiality pursuant to Title 20, California Code of Regulations, § 2501 *et seq*. At a minimum, the technical report shall include the following: | Appendix H | | |
| Appendix B<br>(g) (2) (C) (i) | The summary from Appendix B (g)(2)(A) and the literature search results from Appendix B (g)(2)(B); | Appendix H | | |

Adequacy Issue: Adequate ____ Inadequate ____ **DATA ADEQUACY WORKSHEET** Revision No. 0 Date ____

Technical Area: **Cultural Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

| SITING REGULATIONS | INFORMATION | AFC PAGE NUMBER AND SECTION NUMBER | ADEQUATE YES OR NO | INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS |
|---|---|---|---|---|
| Appendix B (g) (2) (C) (ii) | The survey procedures and methodology used to identify cultural resources and a discussion of the cultural resources identified by the survey; | Appendix H | | |
| Appendix B (g) (2) (C) (iii) | Copies of all new and updated DPR 523(A) forms. If a cultural resource may be impacted by the project, also include the appropriate DPR 523 detail form for each such resource; | Appendix H | | |
| Appendix B (g) (2) (C) (iv) | A map at a scale of 1:24,000 U.S. Geological Survey quadrangle depicting the locations of all previously known and newly identified cultural resources compiled through the research required by Appendix B (g)(2)(B) and Appendix B (g)(2)(C) (ii); and | Appendix H | | |
| Appendix B (g) (2) (C) (v) | The names and qualifications of the cultural resources specialists who contributed to and were responsible for literature searches, surveys, and preparation of the technical report. | Section 5.3.1.6 Appendix H | | |
| Appendix B (g) (2) (D) | Provide a copy of your request to the Native American Heritage Commission (NAHC) for information on Native American sacred sites and lists of Native Americans interested in the project vicinity, and copies of any correspondence received from the NAHC. Notify the Native Americans on the NAHC list about the project, including a project description and map. Provide a copy of all correspondence sent to Native American individuals and groups listed by the NAHC and copies of all responses. Provide a written summary of any oral responses. | Section 5.3.1.11 | | |
| Appendix B (g) (2) (E) | Include in the discussion of proposed mitigation measures required by subdivision (g)(1): | Section 5.3.4 | | |

Adequacy Issue: Adequate ____ Inadequate ____ **DATA ADEQUACY WORKSHEET** Revision No. 0 Date ____

Technical Area: **Cultural Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

| SITING REGULATIONS | INFORMATION | AFC PAGE NUMBER AND SECTION NUMBER | ADEQUATE YES OR NO | INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS |
|---|---|---|---|---|
| Appendix B (g) (2) (E) (i) | A discussion of measures proposed to mitigate project impacts to known cultural resources; | Section 5.3.4 | | |
| Appendix B (g) (2) (E) (ii) | A set of contingency measures proposed to mitigate potential impacts to previously unknown cultural resources and any unanticipated impacts to known cultural resources; and | Section 5.3.4 | | |
| Appendix B (g) (2) (E) (iii) | Educational programs to enhance employee awareness during construction and operation to protect cultural resources. | Section 5.3.4 | | |
| Appendix B (i) (1) (A) | Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, leases, and permits applicable to the proposed project, and a discussion of the applicability of, and conformance with each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed; and | Table 5.3-6 | | |
| Appendix B (i) (1) (B) | Tables which identify each agency with jurisdiction to issue applicable permits, leases, and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities. | Table 5.3-7 | | |

Adequacy Issue: Adequate ____ Inadequate ____ **DATA ADEQUACY WORKSHEET** Revision No. 0 Date ____

Technical Area: **Cultural Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

| SITING REGULATIONS | INFORMATION | AFC PAGE NUMBER AND SECTION NUMBER | ADEQUATE YES OR NO | INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS |
|---|---|---|---|---|
| Appendix B (i) (2) | The name, title, phone number, address (required), and email address (if known), of an official who was contacted within each agency, and also provide the name of the official who will serve as a contact person for Commission staff. | Table 5.3-7 | | |
| Appendix B (i) (3) | A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits. | N/A | | |