
Appendix F: Cultural, Paleontological, and Historical Resources

F-1: Line 406 Archaeological Survey Report

**ARCHAEOLOGICAL SURVEY REPORT
FOR THE PG&E LINE 406 PIPELINE PROJECT
YOLO COUNTY, CALIFORNIA**

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August 2007

Statement of Confidentiality

This report identifies the locations of cultural resources, which are confidential. As nonrenewable resources, archaeological sites can be significantly impacted by disturbances that can affect their cultural, scientific, and artistic values. Disclosure of this information to the public may be in violation of both federal and state laws. To discourage vandalism and artifact looting, cultural resources locations should be kept confidential and report distribution restricted to those who need to know. Applicable U.S. laws include, but are not be limited to, Section 304 of the National Historic Preservation Act (16 USC 470w-3) and the Archaeological Resources Protection Act (16 USC 470hh). California state laws that apply include, but are not be limited to, Government Code Sections 6250 *et seq.* and 6254 *et seq.*

National Archaeological Data Base Information

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Report Date: April 2007

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Contract Number: Job 482-7

U.S.G.S. Quadrangles: Esparto, Madison, and Woodland, CA

Acreage: 1,697 acres

Key words: PG&E, Yolo County, County of Yolo, Phase I, Archaeological Survey, Natural Gas Pipeline, Agriculture, YOL-HRI-4/106, YOL-HRI-4/114.

Management Summary

This report presents the findings of an archaeological survey of a 14-mile 1,000-foot wide corridor for the proposed Pacific Gas and Electric Company (PG&E) Line 406 Pipeline in Yolo County. Garcia and Associates conducted the study at the request of CH2M HILL. The California Public Utilities Commission (CPUC) is the project sponsor and the permit applicant and the lead agency under CEQA. This cultural resources study of a proposed pipeline corridor in Yolo County, California, was conducted by Garcia and Associates. This research was conducted at the request of Marjorie Eisert, CH2M HILL, Oakland, California. The study is part of an assessment to support an application by Pacific Gas and Electric Company (PG&E) to amend its California State Lands Commission lease of State lands #PRC 5438.1.

The purposes of this investigation were to identify cultural resources in the area of potential effects (APE) that are eligible or potentially eligible for listing in the National Register of Historic Places (NRHP) and/or the California Register of Historical Resources (CRHR); record archaeological and architectural resources on Department of Parks and Recreation (DPR) forms; and to prepare an Archaeological Survey Report with recommendations for procedures to avoid potentially adverse effects to both evaluated and un-evaluated resources.

The scope of work comprised a record search at the Northwest Information Center of the California Historic Resources Inventory System; historic archival research of maps and documents, consultation with the Native American Heritage Commission and Native American groups and individuals; correspondence with local historical associations, museums and agencies; and a survey of 1,697 acres, as well as the preparation of this report.

Eight archaeological and architectural sites and one archaeological isolate were identified during the fieldwork, which was conducted between December 2006 and March 2007. Two of the sites were already documented and listed on the Historic Resources Inventory (HRI) (Spring 1986). Six of the newly documented sites are from the historic era, while one archaeological isolate is from the prehistoric period. The majority of the historical resources are farm buildings, residences, and irrigation canals. While these two resources have not been formally evaluated for listing on the NRHP/CRHR, they are currently listed in the HRI and should be avoided as they appear to be good examples of late nineteenth and early twentieth century farm buildings.

Garcia and Associates presents four recommendations to mitigate the potential impacts of the proposed activities on known or potentially eligible cultural resources which are included in the recommendations section at the end of this report.

Copies of this report will be filed with the California Historical Resource Information System, Northwest Information Center.

Table of Contents

Statement of Confidentiality.....i

National Archaeological Data Base Information.....ii

Management Summary.....iii

1.0 Introduction 1

 1.1 Project Area Location and Description 2

 1.2 Regulatory Setting..... 3

 1.3 State Regulations 3

2.0 Environmental Setting 5

 2.1 Climate..... 5

 2.2 Natural Setting 5

 2.3 Paleoenvironment of the Region..... 5

3.0 Cultural Setting 11

 3.1 Prehistoric Overview..... 11

 3.2 Ethnographic Overview 12

 3.3 Historic-period Overview 13

4.0 Methods 15

 4.1 Records Search and Literature Review 15

 4.2 Field Survey 16

5.0 Findings 18

 5.1 Archival Records Search..... 18

 5.2 Field Survey Results 19

6.0 Conclusions and Management Recommendations 26

 6.1 Unanticipated Discoveries 27

 6.2 Human Remains..... 27

7.0 References Cited 28

Appendix A: Survey Coverage and Cultural Resource Location Maps

Appendix B: Correspondence

Appendix C: DPR Site Records

Figures

Figure 1. Surficial Geology of Line 406 APE.	8
Figure 2. County Road 17 facing East with trees along both sides of the road. Buildings of HRI-4/106 are on the right side of the photograph.	21
Figure 3. Garden and southern elevation of residence at 13460 CR 97F.	22
Figure 4. Y-17 location in an unsectioned portion of the Rancho Cañada de Capay land grant, Madison USGS 7.5' Quad.	24
Figure 5. Dorsal side of the uniface retouched flake.	24
Figure 6. Cactus hedge of Y-21 along the northern side of County Road 17, facing northeast.	25

Tables

Table 1. Summary of Soil Properties in Proposed Pipeline Project Area, Yolo County, California (Source: CH2M HILL 2006).	10
Table 2. Summary of cultural resources within the Line 406 Pipeline survey area and their likelihood of eligibility for listing on the NRHP/CRHR.	20
Table 3. Cultural resources not documented in the Line 406 Pipeline Survey Area.	20
Table 4. Recommendations for cultural resources.	27
Table 5. Consultation Phone Log	B-22

1.0 Introduction

This report presents the findings of an archaeological survey of a 14-mile, 1,000-foot wide corridor for the proposed Pacific Gas and Electric Company (PG&E) Line 406 Pipeline in Yolo County. Garcia and Associates conducted the study at the request of CH2M HILL. This investigation was conducted to comply with the California Environmental Quality Act (CEQA). The California Public Utilities Commission (CPUC) is the project sponsor and the permit applicant and lead agency under CEQA. This cultural resources study of a proposed pipeline corridor in Yolo County, California, was conducted by Garcia and Associates at the request of Marjorie Eisert, CH2M HILL, Oakland, California. The study is part of an assessment to support an application by Pacific Gas and Electric Company (PG&E) to amend its California State Lands Commission lease of State lands #PRC 5438.1.

The purposes of this investigation were to identify cultural resources in the area of potential effects (APE) that are eligible or potentially eligible for listing in the National Register of Historic Places (NRHP) and/or the California Register of Historical Resources (CRHR); record archaeological and architectural resources on Department of Parks and Recreation (DPR) forms; and to prepare an Archaeological Survey Report with recommendations for procedures to avoid potentially adverse effects to both evaluated and un-evaluated resources.

The cultural resources study consisted of a literature and records search at the Northwest Information Center (NWIC) of the California Historic Resources Inventory System; historic archival research of maps and documents; consultation with the Native American Heritage Commission and Native American groups and individuals; correspondence with local historical associations, museums and agencies; and a survey of 1,697 acres, as well as the preparation of this report. Background research indicated that two recorded historic architectural sites exist within the APE and several potentially historic buildings are located near the APE. There appears to be a moderate potential for the presence of prehistoric archaeological sites within the APE based on the environmental setting and the archaeologically sensitive nature of the general area.

The cultural resources study for the PG&E Line 406 Project was conducted by the following Garcia and Associates personnel:

Principal Investigator: Christophe Descantes, Ph.D. (Anthropology); Historic and Prehistoric Archaeologist; Garcia and Associates, Oakland, California.

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Archaeological Field Technician: Melinda Hickman, B.A. (Anthropology), Archaeologist; Garcia and Associates, San Anselmo, California.

Archaeologist: Bruno Texier, B.A. (Anthropology); Archaeologist; Garcia and Associates, Auburn, California.

1.1 Project Area Location and Description

The 14-mile long project area for the PG&E Line 406 Expansion Project is situated in Yolo County within the United States Geological Survey (USGS) 7.5' quadrangles of Esparto, Madison, and Woodland. The project area includes the following Townships, Ranges, and Sections:

- Section 13 of Township (T) 10N, Range (R) 2E (mdm)
- Sections 1–3 and 10–12 of T10N, R1W
- Sections 1–10 of T10N, R1E

Approximately 4 miles of Line 406 between T10N R2W Section 12 and T10N R1W Section 3 are not included in the Public Lands Survey Grid, and lies within the two land grants: Cañada de Capay and Rio Jesus Maria.

This project's area of potential effects (APE) is an approximately 100-foot wide and 14-mile long corridor as designated by PG&E. The objectives of the survey, however, were to confirm the location of previously recorded cultural resources and to search for new resources within a 1000-foot wide corridor along the proposed path of the Line 406 Pipeline (see survey coverage maps in Appendix A). The trench of the proposed pipeline will be approximately 8 feet deep in order to maintain 5 feet of cover over the pipe.

1.1.1 Project Description

PG&E has developed an investment plan that includes the construction of several new local gas transmission pipelines for the Sacramento Valley Local Transmission System (System). PG&E's current 10-year investment plan for the System includes a new transmission pipeline that extends from Lines 400/401 to Line 172A (Line 406); a new transmission pipeline that extends from Line 172A in the town of Yolo east to Line 123 in Roseville (Line 407); and a new Distribution Feeder Main (DFM) that extends from Line 407 south to the Sacramento Metropolitan Air Park (Metro Air Park).

Line 406 will be 30 inches in diameter, approximately 14 miles long, and will run between existing Lines 400/401 and existing Line 172A within Yolo County. From Lines 400/401, the pipeline will head east across agricultural fields to County Road (CR) 87, where it will jog south to CR 19. The route will proceed east under CR 87 and across more agricultural fields to Highway (Hwy) 505. After crossing under Hwy 505, the route will align with CR 17. From this point, Line 406 will continue east along CR 17 to a point at the east end of the Dunnigan Hills, where it will jog north for approximately 2,500 feet. At this point, the route will head east along farm roads and cross under Interstate Hwy 5. On the east side of Interstate Hwy 5, Line 406 will continue east to a tie-in point with Line 172A and Line 407 West.

The project will also include the construction of additional appurtenances necessary for operation of the four line segments. Four fenced, aboveground pressure limiting, pressure regulating, and metering stations will be constructed along Line 406 and Line 407 to ensure that proper pressures are maintained in the transmission system and to reduce the pressure of the gas before delivering it to the distribution pipeline system. Two pressure limiting stations, located at the connection of Lines 400/401 and Line 406, and at the connection of Line 172 and Line 407 West, will cover an area of approximately 100 feet by 100 feet. Two pressure regulating stations, located near the corner of Powerline Road and West Elverta Road along the Metro Air Park DFM, and near the corner of Baseline Road and Watt Avenue along the Line 407 East segment, will be constructed in yards approximately 35 feet by 75 feet. Main line bridle valves

and blow-off stacks will be installed within the fenced yards. Other components necessary to the operation of the pipeline include aboveground line-markers and electrolysis test stations

1.2 Regulatory Setting

1.2.1 State Regulations

California Environmental Quality Act (CEQA)

The CEQA Statute and Guidelines include procedures for identifying, analyzing, and disclosing potential adverse impacts to historical resources, which include all resources listed in or formally determined eligible for the National Register, the California Register, or local registers. CEQA further defines a “historical resource” as a resource that meets any of the following criteria:

1. A resource listed in, or determined to be eligible for listing in, the National Register of Historic Places or California Register of Historical Resources.
2. A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3. A resource identified as significant (e.g., rated 1-5) in a historical resource survey meeting the requirements of Public Resource Code Section 5024.1(g) (Department of Parks and Recreation Form 523), unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
4. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered “historically significant” if it meets the criteria for listing on the California Register of Historical Resources (CEQA Guidelines Section 15064.5).
5. A resource that is determined by a local agency to be historically or culturally significant even though it does not meet the other four criteria listed here (e.g., Article 10 of the San Francisco Planning Code).

1.2.2 California Register of Historical Resources

CRHR Criteria of Evaluation

All resources listed in or formally determined eligible for the National Register are eligible for the California Register of Historical Resources (California Register). The California Register is a listing of State of California resources that are significant within the context of California’s history. The California Register is a state-wide program of similar scope to the National Register. In addition, properties designated under municipal or county ordinances are also eligible for listing in the California Register. A historic resource must be significant at the local, state, or national level under one or more of the following criteria that are defined in the California Code of Regulations Title 14, Chapter 11.5, Section 4850.

1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or

2. It is associated with the lives of persons important to local, California, or national history; or
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or
4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

The California Register criteria are similar to National Register criteria, and any resource that meets the above criteria is considered an historical resource under CEQA.

1.2.3 Regulations Concerning Discovery of Human Remains

California Public Resources Code §5097.98: *Notification of Native American human remains, descendants; disposition of human remains and associated grave goods*, mandates that the lead agency adhere to the following regulations when a project results in the identification or disturbance of Native American human remains.

- (a) Whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 24 hours of their notification by the Native American Heritage Commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.
- (b) Whenever the commission is unable to identify a descendent, or the descendent identified fails to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendent and the mediation provided for in subdivision (k) of Section 5097.94 fails to provide measures acceptable to the landowner, the landowner or his or her authorized- representative shall reinter the human remains an items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.
- (c) Notwithstanding the provisions of Section 5097.9, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section and any action taken to implement an agreement developed pursuant to subdivision (l) of Section 5097.94, shall be exempt from the requirements of the California Environmental Quality Act (Division 13 (commencing with Section 21000)).
- (d) Notwithstanding the provisions of Section 30244, the provisions of this section, including those actions taken by the landowner or his or her authorized representative to implement this section, and any action taken to implement an agreement developed pursuant to subdivision (1) of Section 5097.94 shall be exempt from the requirements of the California Coastal Act of 1976 (Division 20 (commencing with Section 30000)).

2.0 Environmental Setting

2.1 Climate

Yolo County and the Central Valley have a Mediterranean climate characterized by hot, dry summers and temperate, wet winters. However, the county receives a marine air influence from the Delta regions to the south that moderates the temperature extremes of the Central Valley. Moratto (1984:171) describes mean temperatures in January falling between 40 and 50° F. Summers are hot with July average temperatures ranging between 70 and 90° F. Mean annual precipitation for the Central Valley is approximately 20 inches.

2.2 Natural Setting

Yolo County is located at the southern end of the Sacramento Valley, in the Great Central Valley of California. The proposed route of the Line 406 Pipeline contains a combination of topographic features. The eastern section of the project area consists of nearly level flat plains, while the central third is largely composed of rolling terraces in the Dunnigan Hills. The western third of the project area consists of more flat plains and ends at the Capay Hills foothills.

Cache Creek is south of the APE and is a major landscape feature across Yolo County, flowing through the Capay Valley, across the lands north of Esparto, south of the Dunnigan Hills, and then north of Woodland, into its settling basin on the Yolo Bypass. Irrigation conveyances and intermittent tributaries were found in the APE.

According to the United States Department of Agriculture (1997), Yolo alluvial fans are found in the Great Valley geomorphic province. The low fluviatile plain sections of the APE comprise Cenozoic nonmarine sedimentary rocks and alluvial deposits which may have buried prehistoric archaeological sites.

Vegetation today is characterized by grasses of primarily European origin, although in the past, oak parkland and native grasses predominated. Animal life in the project area includes coyotes, deer, rabbits, and rodents, as well as domesticated sheep and cattle. Former inhabitants include grizzly bear, wolf, tule elk, and pronghorn antelope.

2.3 Paleoenvironment of the Region

The western United States has been subjected to a series of climatic fluctuations over the last several millennia; the central interior valley portion of California is no exception. Warm and dry episodes have been variably followed by intermittent cool and moist periods. The Holocene (the period since the Pleistocene, or roughly the last 10,000 years) has seen six cool periods followed by five warm periods. The Altithermal Period, ending around 2,900 years ago, was a warm and dry episode that produced wide-ranging effects throughout the west, leading to changes in animal migrations as well as plant productivity and distribution. A cooler period followed for the next 1,400 years, followed by yet another warm and dry period which began about 600 years ago and remains to the present day.

2.3.1 Geomorphic Context

Research shows that late Pleistocene and early Holocene land surfaces are often overlain by alluvium that is generally less than 6,000 years old (Helley et al. 1979). Buried soil profiles (paleosols) occurring on these old land surfaces are used as stratigraphic markers to indicate depositional history at different

locations around the San Francisco Bay and at associated inland valleys in California (Meyer and Rosenthal 1997). Archaeological sites occurring in these areas, therefore, may have been buried and/or eroded by these processes, particularly during the mid-to-late Holocene.

The purpose of analyzing the geomorphologic contexts of the project area is to identify areas where subsurface archaeological deposits are likely to occur. Information regarding sediment types in the APE, combined with factors such as proximity to water, slope of terrain, and soil type provide data to create a picture of the geological and depositional evolution to help archaeologists predict buried site locations. The following sections describe the natural stratigraphy, sediments, and soils within the APE to predict where cultural deposits may be located.

Sediments, Soils, and Landforms

Sediments are organic or inorganic materials that have been transported and deposited by geological processes such as water, wind, or ice. *Soils* are rock and mineral particles mixed with organic matter formed in place by the alteration of rock and sediments (Allen et al. 1999). A *paleosol* is a formerly stable surface or horizon that was once potentially attractive and available as a human living surface. However, these stable surfaces are often buried beneath large deposits of alluvial soils or artificial fill; the study of landscape evolution for the project area can therefore lead to the identification of areas of cultural sensitivity and thus predict where archaeological deposits might be buried. *Alluvial soils* are derived from sedimentary and metasedimentary rocks and were formed in fine-grained deposits including loam, silty clay, and clay loam. *Basin soils* are derived from sedimentary rocks that have produced fine-grained alluvial deposits including clay, clay loam, and silty clay loam.

The subsurface horizontal and vertical landscape of sediments and soils within the APE is based on geotechnical research presented in a feasibility and routing study report prepared by CH2M HILL (2006). The geotechnical conditions described in this section are based on literature review, cursory study of aerial photographs, and a field reconnaissance of the APE conducted by CH2M HILL.

The APE is located along the southwestern margin of the Sacramento Valley in Central California. Topographic conditions vary across the study area, which may be roughly divided into three geographic regions. The western portion of the study area includes the relatively flat terrain of Hungry Hollow, the central portion of the APE includes the Dunnigan Hills, and the eastern portion of the APE includes relatively flat terrain along the western edge of the Sacramento Valley. Small dry tributaries are found along the APE. Cache Creek, which carries substantial flows from the mountainous coastal ranges west of the Sacramento Valley, is south of the APE by at least 1 mile (eastern extremity of APE).

Line 406

The APE is in the west-central portion of California's Great Valley physiographic province. Sediments deposited within the Great Valley include alluvial, lacustrine, and marine deposits of Cretaceous, Tertiary, and Quaternary age. The APE is underlain by consolidated Tertiary and Quaternary alluvial deposits of the Tehama and Red Bluff formations; unconsolidated Quaternary alluvial deposits of the Modesto-Riverbank Formation; and unconsolidated Holocene alluvial basin and channel deposits (CH2M HILL 2006:2-7). Helley and Barker (1979) have mapped the geologic units of Yolo County as illustrated in Figure 1. The Holocene-aged alluvial deposits are the only ones to potentially encompass buried prehistoric archaeological resources, as there are no known archaeological deposits older than 10,000 years recorded in California.

The Proposed Pipeline alignment of Line 406 crosses four geologic units: Tpth, Qoa, Qa, and Qhb (see Figure 1). The oldest geologic unit within the Line 406 project area is the Pliocene-age (5 to 1.6 million years ago) Tehama Formation (Helley and Harwood 1985; Wagner et al. 1987). This formation consists

of sand and siltstone marked by lenses of pebbly conglomerate. Tehama Formation sediments are exposed within the Line 406 project areas in the hilly portions of the APE (Dunnigan Hills). The Pliocene Tehama Formation (Tpth) is poorly consolidated, nonmarine, gray to maroon siltstone, sandstone, tuff, and conglomerate.

Red Bluff Formation sediments are distinctive, bright-red weathered gravels, exposed within the Line 406 APE as caps on Tehama Formation deposits in the Dunnigan Hills. These Pleistocene formation sediments date between 450,000 years ago and 1.1 million years ago (Helley and Harwood 1985). Late and early Pleistocene alluvium (Qoa) consists of sand, silt, clay, and gravel deposits with little or none of the original geomorphic expression preserved.

Loosely consolidated alluvial fan deposits of Modesto Formation fill the flat, low-slope regions within the APE of Line 406 (Helley and Harwood 1985; Wagner et al. 1987). Modesto Formation sediments consist of tan-gray gravelly sand, silt, and clay. The age of this formation is approximately 12,000 – 40,000 years ago based on radiocarbon dating (Marchand and Allwardt 1981).

Holocene and late Pleistocene alluvium (Qa) is comprised of sand, silt, and gravel deposited in fan, valley fill, terrace, or basin environments. Holocene-age (less than 10,000 years old) basin deposits (QhB) generally consist of fine-grained silty and clayey soils occupying flat-floored basins. These deposits are found in the western section of the Line 406 APE. Holocene-age levee and channel deposits typically consist of fine- to coarse-grained sandy, silty and gravelly soils and are mapped in a relatively thin strip in the eastern region of the Line 406 APE. Although not shown in large-scale mapping, localized deposits of Holocene-age sediments likely occur within and adjacent to creek channels that cross and once crossed the APE. These Holocene-age deposits would be the most likely to contain buried archaeological resources. The portion of the APE which crosses through the QhB Holocene aged deposits depicted in the figure below would likely be the only segment of the Line 406 that would have the potential for buried prehistoric cultural deposits.

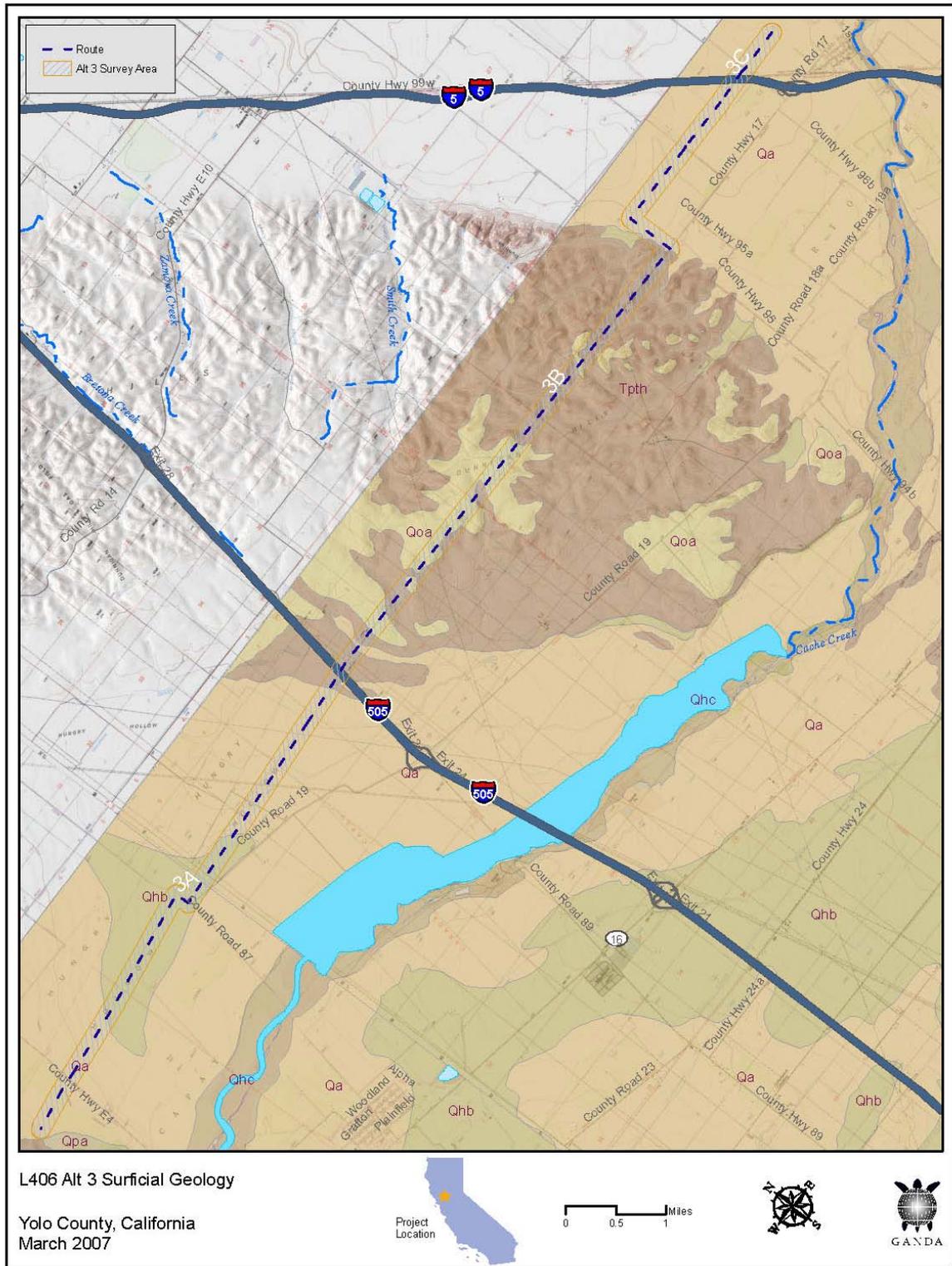


Figure 1. Surficial Geology of Line 406 APE.

Soils

Fifteen soil map units from 12 soil series were found within the APE corridor. Mapped soil units (CH2M HILL 2006) in the Line 406 APE and a description of the soil properties along with the probability for finding buried archaeological sites are presented in Table 1. The trenching will disturb 8 feet (or 96 inches) of surface soil. Below is a discussion of the soils in the three sections of the APE and the potential of encountering buried archaeological deposits.

Line 406 Sections

The deep soils in the western section of the APE have the most soil diversity with eight different soil series: Capay, Pescadero, Corning, Hillgate, Tehama, Marvin, Myers, and Willows. The Tehama loam is unlikely to contain archaeological sites because it is Pliocene in age, but the Capay silty clay (Ca), Hillgate loam (HcA), Marvin silty clay loam (Mf), Myers clay (Ms), Pescadero silty clay (Pb), and the Willows clay (Wm) in the flat sections of the APE have moderate potential for containing buried archaeological deposits. However, aforementioned soils that are underlain by Holocene-age basin deposits (Qhb) have a high potential for buried archaeological resources because archaeological sites have not been found in contexts older than 10,000 years in this area. Indeed, an archaeological isolate (Y-17) was found in Marvin silty clay loam.

Soil mapping units in the central section of the APE in the Dunnigan Hills tend to be shallow (less than 6 feet) and consist of Corning and Sehorn Series soils. These soils have a low potential for buried archaeological deposits.

The deep soils in the flat eastern section of the APE comprise three series: Brentwood, Rincon, and Yolo. Rincon Brentwood silt clay loam (BrA), Yolo silt loam (Ya), and Yolo silty clay loam (Yb) soils have a high likelihood of containing archaeological sites because of their age (Holocene), their proximity to Cache Creek, and the existence of other archaeological sites found in these contexts. Far Western Anthropological Research Group, Inc. (2007) has recently identified an extensive prehistoric archaeological site (EW-1/H) on Yolo silty clay loam soils located on Yolo Ridge along the channel of Cache Creek Slough.

2.3.2 Summary

The potential for encountering buried archaeological deposits within the APE was determined by considering three factors: the age and depth of the sediments and soils; the distance to water sources; and the known archaeological sites in the area.

While the older geologic deposits (Tpth and Qoa) found in the Dunnigan hills have a low potential for buried prehistoric archaeological deposits, the lithic resources in the area may have been extracted for tool manufacturing by the prehistoric population. The Holocene-age alluvial deposits (QhB) of the western and eastern portions of Line 406 likely contain buried soils, which may include buried archaeological deposits. The eastern and western sections of the APE have a high potential for buried archaeological sites due to the Holocene-age alluvium and level ground surfaces. Spot monitoring in areas of high sensitivity (high potential) for buried archaeological deposits or prehistoric surface deposits is recommended, particularly when Holocene-age deposits, located within flat ground, and close proximity to a water source (e.g., EW-1/H (Far Western 2007); CA-YOL-1 (Treganza et al. 1965)).

Table 1. Summary of Soil Properties in Proposed Pipeline Project Area, Yolo County, California (Source: CH2M HILL 2006).

Map Unit	Name	Parent Material	Taxonomic Class	Bedrock	Depth Range	Potential for Buried Surfaces
BrA	Brentwood silty clay loam, 0 to 2 percent	Alluvium from sedimentary rock	Fine, montmorillonitic, thermic Typic Xerochrepts	Deep	0-60 in.	High
Ca	Capay silty clay	Alluvium from sedimentary rock	Fine, montmorillonitic, thermic Typic Chromoxererts	Deep	0-64 in.	Moderate
CtD2	Corning gravelly loam, 2 to 15 percent slopes, eroded	Mixed gravelly alluvium	Fine, montmorillonitic, thermic Typic Palexeralfs	Deep	0-60 in.	Low
HcA	Hillgate loam, 0 to 2 percent slopes	Alluvium from sedimentary rock	Fine, montmorillonitic, thermic Typic Palexeralfs	Deep	0-70 in.	Moderate
Mf	Marvin silty clay loam	Alluvium from sedimentary rock	Fine, montmorillonite, thermic Aquic Haploxeralfs	Deep	-----	High
Ms	Myers clay	Alluvium from sedimentary rock	Fine, montmorillonite, thermic Entic Chromoxererts	Deep	0-60 in.	Moderate
Pb	Pescadero silty clay, saline-alkali	Alluvium from sedimentary rock	Fine, montmorillonite, thermic Typic Natraqualfs	Deep	0-72 in.	Moderate
Rg	Rincon silty clay loam	Weathered from sedimentary rock	Fine, montmorillonite, thermic Mollic Haploxeralfs	Deep	0-72 in.	High
SkD	Sehorn clay, 2 to 15 percent slopes	Alluvium from sedimentary rock	Fine, montmorillonite, thermic Entic Chromoxererts	Shallow	0-38 in.	Low
SmD	Sehorn-Balcom complex, 2 to 15 percent slopes	60% Sehorn Clay, 30% Balcom silty clay loam	Fine, montmorillonite, thermic Entic Chromoxererts	Shallow	0-38 in.	Low
SmE2	Sehorn-Balcom complex, 15 to 30 percent slopes, eroded	50% Sehorn Clay, 40% Balcom silty clay loam	Fine, montmorillonite, thermic Entic Chromoxererts	Shallow	0-38 in.	Low
TaA	Tehama loam, 0 to 2 percent	Mixed alluvium from sedimentary rock	Fine-loamy, mixed, thermic Typic Haploxeralfs	Deep	0-63 in.	Very Low
Wm	Willows clay, marly variant	Alluvium from sedimentary rocks	Fine, montmorillonitic, thermic Typic Pelloxererts	Deep	0-60 in.	Moderate
Ya	Yolo silt loam	Alluvium from sedimentary rock	Fine-silty, mixed, nonacid, thermic typic Xerorthents	Deep	0-65 in.	High
Yb	Yolo silty clay loam	Alluvium from sedimentary rock	Fine-silty, mixed, nonacid, thermic Typic Xerorthents	Deep	0-60 in.	High

3.0 Cultural Setting

Prehistoric archaeological sites in this portion of Yolo County tend to be situated at the base of hills, near ecotones, alluvial flats, and near sources of water confluences, including springs. The project area terrain is a combination of foothills and plains with seasonal creek runoffs in the valleys between them. Some creeks are bounded by dense low vegetation and oak (*Quercus* sp.) trees. The plains have been cultivated for agriculture, mainly vineyards, and most of the foothills are used for cattle and sheep pastures.

The land has been heavily developed for agriculture. Cattle and sheep farms, introduced in the 1930s, dominate the landscape today along with vineyards and winery operations. Prehistoric sites in the region range from seasonal camp sites to very large village sites, seasonal habitation sites, and burial sites. The types of prehistoric artifacts found include scrapers, drills, shell beads, *manos*, *metates*, cores, cobble tools, fire-affected rock, groundstones, flaked stone tool debitage, middens, faunal and floral remains and human remains or burials. Historic sites include farm houses, farm complexes with several outbuildings, ranches, schools, churches, and historic structures such as bridges and storage tanks. Two historic resources listed on the Historic Resources Inventory, YOL-HRI-4/106 and YOL-HRI-4/114, were previously recorded and evaluated as appearing eligible (code 4) for listing on the National Register.

3.1 Prehistoric Overview

There are three general patterns of cultural adaptation throughout the Central Valley based on artifact assemblages during the period between 5000 and 200 BP. The three primary time periods are the Early Period (5000–2500 BP), the Middle Period (2500–1300 BP), and the Late Period (1300–200 BP or contact). There are numerous subphases for each period (Bennyhoff and Hughes 1987). Milliken and Bennyhoff (1993) refined and simplified this sequence in 1993 to the Early Period (5000–1500 BP), the Lower, Middle, and Upper Middle Period (1100–500 BP), and the Late Period, Phase 1 and 2 (900–200 BP), as well as the Historic Period beginning in A.D. 1800). Although the Central Valley Region may have been inhabited by humans as early as 10,000 years ago, the evidence of early human use is likely buried by alluvial deposits that have accumulated during the last several thousand years (Moratto 1984). More is known about the later periods of human history.

The Central California Taxonomic System (CCTS) is a cultural sequence that delineated three central California horizons: Early, Middle, and Late. The general culture history of the CCTS, which originally relied heavily on burial methods, was later expanded to include general ways in which people adapted to their environment (Beardsley 1954). Fredrickson (1973:7–8) identified regional patterns that were relevant for the Central Valley Region, with a pattern defined as:

“...an adaptive mode extending across one or more regions, characterized by particular technological skills and devices, particular economic modes, including participation in trade networks and practices surrounding wealth, and by particular mortuary and ceremonial practices.”

Three such patterns, which overlap in adjoining areas, are recognized for central California: the Windmill, the Berkeley, and the Augustine Patterns.

The **Early Period/Windmill Pattern** sites are most often found in the Early Period (5000–2500 B.P.), but are known to extend into the Middle or Archaic Period (Moratto 1984:210). Situated in

riverine, marshland, or valley floor settings as well as on small knolls above prehistoric seasonal floodplains, most Windmill Pattern village sites contain burials that are oriented to the west (Moratto 1984:203). These sites contain large amounts of mortuary artifacts with indications of social hierarchy, and often include large projectile points and a variety of fishing gear such as net weights, bone hooks, and spear points. The archaeological assemblages of this period contain numerous projectile points including large obsidian concave base and stemmed points as well as rectangular *Olivella* beads with a wide range of faunal remains (Erlandson and Jones 2002). In addition, evidence of trade and interaction is inferred from the presence of non-local utilitarian and ceremonial items. Faunal remains imply a hunting economy that included both large and small mammals. This pattern was focused primarily on the lower Sacramento-San Joaquin Valley and Delta, and these people may have entered the region with this adaptation more or less fully developed.

The **Middle Period/Berkeley Pattern** has been dated from 3,000 B.P. to 1,500 B.P. This corresponds to Fredrickson's Archaic Period that was further divided into Early, Middle, and Late (Fredrickson 1973). Fredrickson defined the Berkeley Pattern by the economic adaptive strategies based around the extensive and rich tidal marsh environment of the San Francisco Bay at the time. Early representations of the Berkeley Pattern resemble the Windmill Pattern but later shift to large shellmounds located near water sources with the presence of projectile points and atlatls, suggesting that hunting was still an important part of subsistence. The Berkeley Pattern expanded eastward to the Central Valley around 2,500 years ago, slowly replacing the Windmill people (Moratto 1984:209). Berkeley sites are found in diverse environmental settings, with riverine settings prevalent. This pattern has a greater emphasis on the exploitation of the acorn as a staple. Unlike the Windmill Pattern, burials are tightly flexed and have no consistent orientation. Projectile points become progressively more regularized in shape and somewhat smaller over time. The initial Berkeley Pattern may represent the spread of proto-Miwok and Costanoans from their hypothesized lower Sacramento Valley/Delta homeland.

The widespread **Late Period/Augustine Pattern** coincides with the Late or Emergent Period, from circa 1,300 B.P. to European contact. This period is also divided into the Middle/Late Transition (1300–800 BP) and Late Period (800 BP–contact). The Augustine Pattern reflects a change in subsistence and land use patterns to those of the ethnographically known people (Patwin) of the historic era. Intensive fishing, hunting, and harvesting of acorns and small hard seeds typify this period (Moratto 1984:211). The Augustine Pattern is characterized by a general increase in population, settlements, and a more regularized exchange system and increased evidence of ceremonialism. Exchange became well developed, and an even more intensive emphasis was placed on the use of acorns, as evidenced by the presence in the archaeological record of shaped mortars and pestles and numerous hopper mortars. Distinctive artifacts in this pattern include small notched and serrated projectile points indicative of the introduction and spread of the bow-and-arrow; bone awls used in basketry; clay effigies; bone whistles; stone pipes; and occasional pottery. Cremation and flexed burials are also prevalent. Ornamental artifacts (*Olivella* beads and *Halotis* ornaments) become increasingly common in burials, suggesting an increase in social status and ranking. Spanish explorers and missions disrupted this cultural pattern in the latter half of the eighteenth century (Moratto 1984:283).

3.2 Ethnographic Overview

The study area is located in the center of an area ethnographically recorded as Patwin territory. The Sacramento River Valley is characterized by dense vegetation, with open grasslands to the west of the Sacramento River region and on the eastern slope of the coast range. The open grassland, subject to

winter flooding and very dry summers, was occupied sparsely and seasonally by the Patwin. Tribelets in the hills lived in the numerous intermontane valleys, particularly along drainages. Larger villages were inhabited by the Patwin along the Sacramento River, within the valleys of the foothills, and along major creeks such as the Putah and Cache (Johnson 1978).

The city of Yolo, which sits on a portion of Cache Creek, has been identified as the village site of *Churup*. The name *Yolo* is derived from the Patwin Indian word *Yoloy* meaning place of the [tule] rushes (Derr 1990). Subsistence hunting and fishing and plant seed collection were the means of survival. Housing was in earth-covered, semi-subterranean round structures built in the foothill region. Favored locations for these structures in the winter were higher spots along streams that flowed into the open valleys. In the summer, the Patwin moved away from the main water courses into the hills or mountains. Structures included ceremonial dance houses, family houses, sweathouses, and menstrual huts (Johnson 1978).

3.3 Historic-period Overview

Portions of the following information have been excerpted from the Yolo County, California website (www.yolocounty.org) and the City of Woodland, California website (<http://www.ci.woodland.ca.us/history.pdf>).

Yolo County was one of the original 27 counties created when California became a state in 1850. It is bounded by the Sacramento River on the east and the coastal mountains to the west. The plain in between has a rich soil built up from centuries of sediment deposition from Sacramento River flooding.

As indicated above, “Yolo” is derived from the native Patwin Indian word *yoloy* meaning “abounding in the rushes”. Most Patwin groups occupied the major river courses and tributary drainages of their territory, such as the Sacramento River, Cache, and Putah creeks, and in some cases, springs. Other historians believe it to be the name of the Indian chief Yodo, or the Indian village of Yodoi.

The first recorded contact with Westerners occurred in the late 1820s. These included Spanish missionaries as well as trappers and hunters who could be found along the banks of “Cache Creek”—named by French-Canadian trappers. The proselytization and enslavement of the Patwin by the Spanish missionaries rapidly and dramatically reduced their numbers through hardship and disease. A malarial epidemic in 1830–33 and a smallpox epidemic in 1837 decimated much of the surviving population.

Modern historical development of the county was the result of two main factors: its rich soil and climatic conditions, and its good transportation systems.

In 1842 the Mexican government granted William Gordon two leagues of land (the Guesissosi grant) on both sides of Cache Creek from the western hills to the Sacramento River. He is said to have grown wheat and other crops in the fertile soils of the area. One historical document notes that the first laborers used by the earliest farmers of Woodland in the 1850s were the native Patwin peoples.

The survey area for this study passed through two land grants: Cañada de Capay and Rio Jesus Maria. The 40,078.58-acre land grant Cañada de Capay was confirmed to Jasper O’Farrell et al. on February 16, 1865, and the Rio Jesus Maria land grant (26,637.42) to J. M. Harbin et al. on July 3, 1858.

In 1846 the nine-league Rancho Canada de Capay, extending from the western edge of Gordon's grant through the north end of the Capay Valley, was granted to the three Berryessa brothers. Livestock production became the principal economic activity of rancheros and their followers.

Money earned in the gold fields of California financed the purchase and cultivation of much of the farmland in Yolo County. The variety of crops grown in the region included alfalfa, tobacco, peanuts, grapes, rice, sugar beets, various grains, and row crops. Wineries, livestock, and dairy operations were also important agricultural operations. Ranch lands with sheep and agricultural fields of alfalfa fields were identified in the APE.

Irrigation was a major contributor to the agricultural success of the region. The first irrigation canal was developed in 1856 by James Moore (Moore's Ditch), who owned exclusive water rights to Cache Creek. The agricultural fields of the APE had historically important water conveyances, such as the Hungry Hollow Canal and the Goodnow Slough that are being actively used. Several minor irrigation ditches and canals were also identified in the survey area.

Railroads played an important role in the development of the region because they facilitated the transport of agricultural products to market, and goods to local residents. In 1869, the California Pacific Railroad Company constructed a line between Davis (formerly Davisville) and Marysville with a Woodland station. The rail line expanded and was acquired by Southern Pacific Railroad.

Over time, modern highways replaced railroads as the dominant form of transportation. Interstate 505, in the eastern section of the project area, is part of California's initial system of interstate highways, submitted by the state June 27, 1945, and approved August 7, 1947 (California Department of Transportation 1984). The 32.98 mile long highway cuts south from I-5 in Yolo County to I-80 near Vacaville. The alignment for Interstate 5 was adopted and acquisition of the rights-of-way began in 1959. Interstate 5 opened in 1973. Both highways cross the path of the proposed Line 406 Pipeline.

4.0 Methods

4.1 Records Search and Literature Review

On December 30, 2005, Garcia and Associates prepared a cultural resource constraints analysis report based on a Northwest Information Center (NWIC) of the California Historic Resources Information Service (CHRIS) records search and a windshield survey of the study area in Yolo County, California (Cox et al. 2005). This previous report discussed cultural resource constraints associated with three proposed routing alternatives (1, 2A, 2B, and 3) for the Yolo Pipeline as outlined by PG&E. The study area, as designated by PG&E, was bounded by: Interstate Highway 5 to the east; the Coastal Range mountain slope to the west; the Yolo and Colusa County line to the north; and County Roads 18 and 19 and a portion of Cache Creek to the south.

The records search of the NWIC/CHRIS was performed on November 9–11, 2005. The records search included a review of all site records and study reports on file within a one-mile radius of the project area. The records search and literature review for this study were conducted in order to: (1) determine whether known cultural resources had been recorded within or adjacent to the project area, and (2) assess the likelihood of unrecorded cultural resources based on archaeological, ethnographic, and historical documents and literature, and on the environmental setting of nearby sites. Included in the review were the *California Inventory of Historic Resources* (California Department of Parks and Recreation 1976) and the California Office of Historic Preservation's *Five Views: An Ethnic Historic Site Survey for California* (CA-OHP 1988), *California Historical Landmarks* (CA-OHP 1990), *California Points of Historical Interest* (CA-OHP 1992), and the *Historic Properties Directory Listing by City* (CA-OHP 2003). The *Historic Properties Directory* includes the National Register of Historic Places and the California Register of Historical Resources, and the most recent listings (through August 2005) of the California Historical Landmarks and California Points of Historical Interest.

Based on this research and the location of the study area not far from Cache Creek, it was concluded that there was a strong possibility of encountering prehistoric cultural material, ranging from isolates to lithic debris scatters and burials. Several farm buildings of potential historical significance were also observed during the windshield survey. No buried archaeological sites are expected in rolling hills because of the lack of alluvial sediments. While this report does not include a detailed analysis of the soils and sediments, there is a higher probability for prehistoric living surfaces (paleosols) in areas close to fresh water that are buried under deep alluvial deposits. The natural occurring chert cobbles in the area may have also been exploited by prehistoric peoples.

4.1.1 Native American Consultation and Historical Agencies Contacted

As part of the consultation process with Native American organizations and individuals, Garcia and Associates contacted the Native American Heritage Commission (NAHC) on March 2, 2007 with a request for information about sacred lands that may be located within the project area (see Appendix C). A search of the Sacred Lands file housed at the NAHC did not result in the identification of any sacred lands within the proposed study area. On March 7, 2007, the NAHC provided a list of five local groups and individuals to contact for further information regarding local knowledge of sacred lands.

Consultation letters were sent to five individuals from these local groups on March 8, 2007. The recipients included Mr. Bill Combs, Mr. Kesner Flores and Mr. Marshall McKay of the Rumsey

Indian Rancheria of Wintun, Ms. Elaine Patterson of the Cortina Band of Indians, and the Wintun Environmental Protection Agency. Garcia and Associates included a project description and three maps with a request to be notified if they could provide any information about the project area or if they had concerns about the project. Follow-up phone calls were made to each of the Native American groups. In an e-mail, Mr. Kesner Flores recommended monitoring and a discovery plan (see e-mail Appendix C). Mr. Flores was telephoned to discuss his concerns. Despite the fact that Cache Creek is 1 to 5 miles away from the project area, Mr. Flores believes that some of the tributaries may actually be much closer to the project area. He does not believe that an on-site monitor is necessary, but thinks that spot checking and a discovery plan for inadvertent discoveries will be appropriate (March 28, 2007). Follow-up phone calls to the other Native American contacts were attempted, but direct contact could not be made. Messages were left for these individuals; to date, no responses have been received.

Garcia and Associates personnel also contacted the Yolo County Historical Museum (Gibson House), the Yolo County Historical Society, and the Yolo County Archives on March 2, 2007 (see Appendix C). To date, no responses have been received.

An archival visit was conducted at the Yolo County Archives, and the Bancroft Library and the Water Resources Center Archives at the University of California, Berkeley. Historic General Land Office (GLO) plat maps were requested from the Bureau of Land Management in Sacramento. The Yolo County Flood Control and Water Conservation District were also contacted for historical information on the irrigation canals and sloughs in the project area. Finally, land owners were interviewed for historical information on cultural resources on their properties.

4.2 Field Survey

Two surveys were conducted in the project area. The first survey was a windshield survey on November 17, 2005 to help determine the probability of unrecorded cultural resources within or adjacent to the original study area, based on the environmental setting and available historical documents and literature. The second survey was an intensive pedestrian survey of the Line 406 Route 3 Pipeline Project Area (see Appendix A for the survey area covered).

Between December 2006 and February 2007, eight days were spent surveying the Alternative Route 3 corridor. Generally, three persons, spaced 25 meters (82 feet) apart, walked 12 transects within the 1,000-foot-wide Route 3 corridor; however, a two-person crew spaced 40 meters (131 feet) apart surveyed a segment approximately 3.5 miles long north of County Road 17 and east of Interstate 505.

Garcia and Associates archaeologists looked for evidence of prehistoric cultural resources such as obsidian and chert flaked-stone tools (e.g., projectile points, knives, choppers), middens (culturally darkened soil containing heat-affected rock, burials, artifacts, animal bone, or shellfish remains), and/or stone milling equipment, such as mortars and pestles. Historic resources of interest included bridges, canals, ditches, backfilled privies, wells, and refuse pits, concrete, stone, or adobe walls or foundations, and concentrations of metal, glass, and ceramic refuse.

Previously recorded and new cultural resources were photographed and their locational coordinates were recorded (or re-recorded) with a GPS unit. Point locational data were recorded for the archaeological sites, and line data were recorded for the linear features, such as the irrigation ditches. A Trimble Geo XT GPS Datalogger unit was used in combination with site records and photos to relocate the historic resources in the survey area. Newly-found cultural resources were recorded with

the GPS unit and drawn on a field map. The GPS data files were downloaded and post-processed with GPS Pathfinder Office 3.1 software. In Pathfinder Office, raw data files were differentially corrected to the base station nearest to the project area. The corrected files were exported as ArcView shapefiles into an ArcMap 9.1 GIS project. GIS layers provided by PG&E were used as base files for the project. The GIS data from the survey were used to determine which identified historic resources were in the survey area and to generate the project map for this report.

Three days spanning March 19–21, 2007 were spent recording cultural resources more than 50 years old. Where appropriate, cultural resources were documented as prescribed by the California Office of Historic Preservation (1995). Appendix D contains the Department of Parks and Recreation site records.

5.0 Findings

5.1 Archival Records Search

This section discusses the findings of the archival records search for the Alternative Route 3, which has slightly changed since the field survey for this investigation, but is still well within the boundaries of the original APE. A discussion of the results for the entire APE can be found in Cox et al. (2005).

Three previous cultural resources surveys have been conducted within a one-mile radius of the original Route 3 alternative Line 406 pipeline project area. The first archaeological survey (S-020007) covered the Cache Creek and Yolo Bypass areas, east of Interstate 5, but within one mile of the project area boundary (Shapiro and Syda 1997). The eastern end of Route 3 circumvents a heavily occupied habitation site in the city of Yolo by approximately half a mile. The study found seven sites in and around the present city of Yolo, which sits on a portion of Cache Creek, which has been identified as the village site of *Churup*. There, sites included a village site of several acres, with associated sites, including burials (CA-YOL-135). The landowner has found many artifacts, including obsidian projectile points, blades, drills, and scrapers. The boundaries of this site are unknown. There are six known sites in the immediate area of the town, including CA-YOL-187, with additional burials reported. The sites are all in close proximity of Cache Creek.

The second archaeological field survey (S-023627), conducted by Harper (1974) for Caltrans, and covering an area from Interstate 5 to Russell Boulevard near Winters, did not identify any cultural resources.

The third archaeological study within a mile of the project area (S-005156) was conducted by Treganza et al. (1965). This study crosses the proposed route of Line 406. The survey was 250-plus miles along the western side of the Sacramento Valley along the Tehama-Colusa Canal. At present, the Canal runs south from Red Bluff, ending near Cordilla in the region of Suisun Bay. Although five village sites and 19 archaeological sites were found during the three-year survey, only one, CA-YOL-1, is close to the proposed route of Line 406. CA-YOL-1, a large village site covering two acres next to Cache Creek, is situated approximately two miles south of the proposed path for Line 406. The site, which was probably destroyed by the Tehama-Colusa Canal, had artifacts ranging from points to obsidian fragments, clam shell beads, and some bones.

The investigation of 10 GLO maps of the survey area ranging from 1851 to 1869 did not indicate any potential historical buildings or structures in the survey area, except for eight short, unrecorded roads crossing present-day County Road 17 from Sections 1–3 in the 10 N Township, 1 E Range. It is clear, however, that the general area was occupied and used for agricultural purposes as early as 1858. Demerleys Field, identified in a 1864 GLO map (NW ¼, Section 3, 10 N Township, 1 E Range) is in the path of the Line 406 Pipeline. Canals emanating from Cache Creek were not present, but several fields were located adjacent to the creek. The survey area for this study passed through two land grants: Cañada de Capay and Rio Jesus Maria. The 40,078.58-acre land grant Cañada de Capay was confirmed to Jasper O'Farrell et al. on February 16, 1865, and the Rio Jesus Maria land grant (26,637.42) to J. M. Harbin et al. on July 3, 1858.

Two previously recorded historical resources were found in the study area. The John Ritchie House (35265 County Road 17), YOL-HRI-4/106, is a two-story vernacular house of no particular style estimated to have been built in 1860. Several small old buildings are also on the property, such as a barn, a smokehouse, and bunk houses. The Herman Richter House (13464 County Road 97F), YOL-

HRI-4/114, built in 1929, is a large two-story Mediterranean Revival house. The house is constructed of brick. Several redwood buildings (e.g., a smokehouse, a granary, a barn, and several sheds) are located within the study area. A single-story house (13460 County Road 97F), built in the 1860s, is part of the same property. Site records for both of these properties were updated (see Appendix D).

5.2 Field Survey Results

The archaeological visibility of the landscape was excellent, with the ground surface clear of obstructions such as overgrowth and conducive for the identification of cultural resources. The survey area comprised agricultural fields and ranch lands of low grass fields, much of which had been previously disturbed by road construction, agriculture, and pastoral use of the land. Part of the grazing lands in the survey area appeared to have been recently burned (a fire storm swept through the area in September 2006). Carcasses of several burned animals, predominantly sheep, were noticed in the grazing areas. None of the bone scatters had any archaeological significance.

Weathered cobbles ranging from sub-rounded to sub-angular in shape were found on the ground surface. A large quantity of chert and other cryptocrystalline rocks were found, but no flakes or archaeological artifacts were identified. Other lithic fragments included limestone cobbles. Several suspected owl burrows were observed during the survey. On December 5, 2006, GANDA archaeologists flagged these locations and notified PG&E biologists who were also in the field.

Eight cultural resources and one isolate of suitable age were identified in the Line 406 survey area: one prehistoric and eight historic in age. Table 1 provides a summary of the cultural resources identified during the survey. Two of the historic resources, YOL-HRI-4/106 and YOL-HRI-4/114, were already registered in the State of California's Historic Resources Inventory. Site records for both previously recorded historic resources were updated for this investigation. Specific details on the documented resources can be found in Appendix D, where the DPR site records are located. A DPR form was not necessary for Y-17 because it is a prehistoric archaeological isolate.

Certain cultural resources found during the survey were not recorded on DPR forms because they were either outside the survey boundary or they are less than 50 years of age (See Table 2). 'Movable stock', also known as, old vehicles, trailers, plows, disc machines, and other such materials over 50 years of age in the survey area, were not recorded on DPR forms. The many mechanized water pumps situated at the sites of wells, and associated with the agricultural fields, were also not recorded.

In addition, numerous ditches of indeterminate age along the sides of roads and agricultural fields, were not documented on DPR form as some of the irrigation conveyances contained trash and appeared to have been recently maintained and in present use. Two irrigation canals/sloughs, however, were found to be over 50 years old: the Hungry Hollow Canal (Y-9) and the Goodnow Slough (Y-3). The path and characteristics of these conveyances within the APE were recorded and are included in Appendix B.

Table 2. Summary of cultural resources within the Line 406 Pipeline survey area and their likelihood of eligibility for listing on the NRHP/CRHR.

Site #	Description	Age Category	Status	*Distance to Line 406	Eligibility Criteria
YOL-HRI-4/106	John Ritchie House & other buildings	Historic	DPR Update	530 feet	c, d
YOL-HRI-4/114	Herman Richter House & other buildings	Historic	DPR Update	107 feet	c
Y-3	Goodnow Slough	Historic	New DPR	Crosses alignment	a
Y-6	Dump in drainage	Historic	New DPR	340 feet	NA
Y-7	Three barns & two residences	Historic	New DPR	**135 feet	c
Y-9	Hungry Hollow Canal	Historic	New DPR	Crosses alignment	a
Y-17	Chert uniface or retouched flake	Prehistoric	Documented	290 feet	NA
Y-20	One house & barn	Historic	New DPR	125 feet	c
Y-21	Southern Pacific Railroad Section	Historic	New DPR	Crosses alignment	a
* distance from the center of the proposed Pipeline path to the closest historical resource ** two undocumented historic residences are less than 50 feet from the centerline of the proposed Pipeline path NA not applicable					

Table 3. Cultural resources not documented in the Line 406 Pipeline Survey Area.

Site #	Description	Age Category	Reason
Y-1	Concrete ditch	Unknown	Date unknown
Y-2	Barn	Historic	Outside survey area
Y-4	Concrete pad, metal trough and brick-lined well	Historic	Outside survey area
Y-5	Horseshoe with square nails	Historic	Outside survey area
Y-5a	Historic Windmill and four trees	Historic	Outside survey area
Y-8	Long irrigation ditch (spur of China Slough)	Historic	Date unknown
Y-10	Earthen berm ditch with modern trash	Unknown	Date unknown
Y-11	Ditch	Unknown	Date unknown
Y-12	Electric Johnson water well pump	Unknown	Date unknown
Y-13	Water well with electric pump	Unknown	Date unknown
Y-14	Earthen ditch	Unknown	Date unknown
Y-15	Earthen canal	Unknown	Date unknown
Y-16	Earthen ditch	Unknown	Date unknown
Y-18	Wooden corral	Unknown	Outside survey area
Y-19	Human-made pond	Modern	Less than 50 years of age

5.2.1 Previously Recorded Cultural Resources

A general description of the eight cultural resources and one archaeological isolate identified in the survey area is given below. More specific details are found in the DPR site records in Appendix D. None of the cultural resources below have been formally evaluated for the eligibility to the NRHP/CRHR, however, we have made a preliminary assessment of whether each resource appears to meet the eligibility requirements for listing on the NRHP/CRHR.

YOL-HRI-4/106

This historical resource contains both historic era buildings and associated historical archaeological deposits. The John Ritchie House is a two-story vernacular house of no particular style estimated to have been built in 1860. The historic resource has been previously recorded in DPR forms (1986), but it has not been evaluated for listing in the National or California Register. Several small old buildings are also on the property, such as a barn, a smokehouse, and bunk houses. The northwest corner of the property parcel is within 500 feet of the proposed Pipeline path, but the house itself and the associated historic buildings are near the outer 500-foot project area survey limits of the proposed Pipeline path.

Although the resource is presently unoccupied, it is still in use and maintained by Bruce Rodegerdts for agricultural purposes. The property has several buildings of historic age that are in fair condition: a vernacular house, barn, smoke house, and two bunkhouses. The China Slough, located behind the property, has evidence of eroding historic trash (e.g., nineteenth century liquor and medicinal bottles). This archaeological resource likely has information value because of its association with the John Ritchie property. There are also 11 trees along the property lining the southern side of County Road 17, as well as trees on the opposite side of the road (Figure 2), which are in the survey area. The historical resource is an historic archaeological site because of the historic midden in the slough. The site has potential for contributing to historical interpretations of late nineteenth century and early twentieth agricultural life in Yolo County, and therefore may be eligible for listing on the National and California Registers.



Figure 2. County Road 17 facing East with trees along both sides of the road. Buildings of HRI-4/106 are on the right side of the photograph.

YOL-HRI-4/114

The Herman Richter House (13464 County Road 97F), YOL-HRI-4/114, built in 1927, is a large two-story Mediterranean Revival house. A stage coach station once stood near this home, with a trail passing through the present ranch. Several redwood buildings (e.g., a smokehouse, a granary, a barn, a bird house, and several sheds built in the late 1800s and early 1900s) and a second residence are located within the project survey area. According to the owner, the one single-story house (13460 County Road 97F) was built between 1865 and 1875, and still has the original foundation. It was a two-storied home before it was renovated in 1949. All of the buildings are very well maintained, in

excellent condition, and show evidence of renovation with modern materials. Both residences, which have well-groomed gardens (Figure 3), are the closest buildings on the property to the proposed Line 406 pipeline. The closest residence (Mediterranean Revival House) to the Pipeline right-of-way is 107 feet from the center of the proposed pipeline path. The gardens of both residences, however, are much closer to the Pipeline Path.

This historical resource has been recorded on DPR forms, but has not been formally evaluated for its potential for listing on the NRHP/CRHR. However, it appears likely that this resource would be potentially eligible.

5.2.2 Newly Identified Cultural Resources

Y-3

The Goodnow Slough is a long earthen-walled irrigation canal that passes through the survey area in two locations on the eastern side of Interstate 505 and crosses the path of the proposed Pipeline. Its depth and width vary considerably. Several smaller irrigation ditches feed in and out of the slough. The construction date for the slough is not clear, but the slough is found on a map from a 1967 report entitled *A Reconnaissance Study to Investigate the Feasibility of the Hungry Hollow Watershed Project* by the State of California Division of Soil Conservation.

The Goodnow Slough has not been evaluated for listing on the NRHP/CRHR. However, a preliminary assessment of the resources indicates that it is likely eligible for listing.

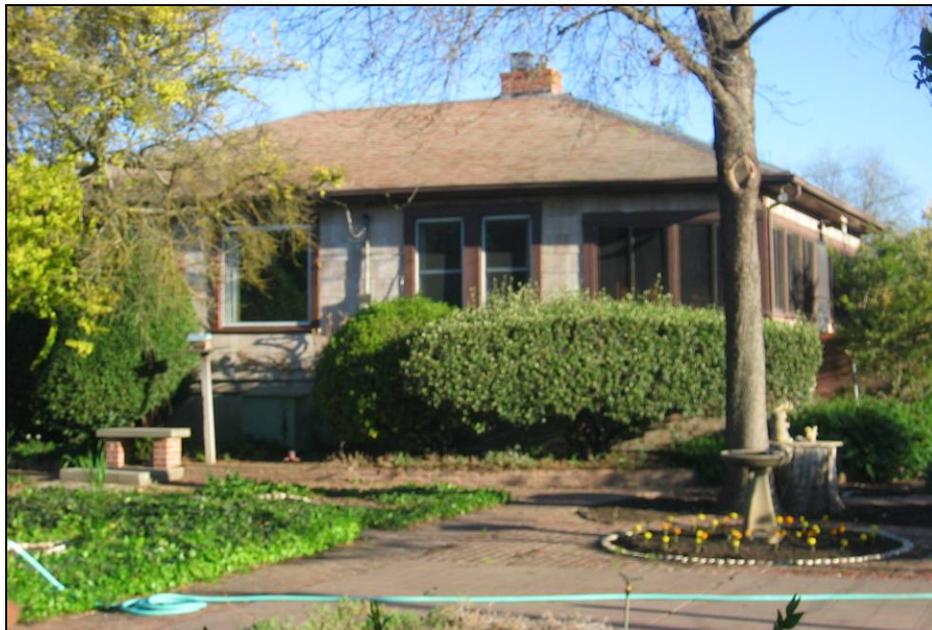


Figure 3. Garden and southern elevation of residence at 13460 CR 97F.

Y-6

Y-6 is an historic archaeological site located 340 feet south of the center of the Pipeline Path in a dry shallow gulch. A windmill-powered water pump, trough, and four trees are about 300 feet to the west, and may at one time have been associated with the site. Today, the two locations are separated by a wire fence. Artifacts are eroding out of the sidewalls of the gulch, from top to bottom. Most of the artifacts appear to be household and agricultural items, such as fragments of plates, concrete, iron sheet metal, and window and bottle glass.

The historical resource has not been evaluated for its potential eligibility for listing on the NRHP or the CRHR; however, the site is outside the APE, and therefore does not require formal evaluation because it will not be impacted by the project.

Y-7

Y-7 is a historical resource at 32840 County Road 17 that has a residence and three farm buildings from the historic era. According to the owner, the farm buildings consist of a granary built in 1881 and two barns built in the 1940s. It was later discovered that the residence, which appeared young because of extensive renovations conducted the previous year, was actually constructed in 1927. The closest farm building is 135 feet from the Pipeline Path center line, but the residence is less than 50 feet. Another residence directly across the road (less than 50 feet from the center of the Pipeline Path), which has also been renovated, was also probably built more than 50 years ago. All of the aforementioned buildings are in use.

The buildings at 32840 County Road 17 have not been evaluated for their potential for eligibility for listing on the NRHP/CRHR; however, a preliminary assessment of the resources indicates that it is likely eligible for listing.

Y-9

Passing through the middle of an orchard, Site Y-9 (Hungry Hollow Canal) is a long and wide earthen-walled canal that enters the southeast portion of the survey area and crosses the path of the Line 406 gas pipeline. The water in this canal originates from Cache Creek and passes through Capay Dam and West Adams Canal before spurring to Hungry Hollow Canal. The canal was likely built before 1914, the construction date of Hungry Hollow Bridge, which crosses a branch of Hungry Hollow Creek.

Two stepped concrete foundations (former bridge abutments) are an interesting feature of the canal. The bridge foundation is directly in the path of the Pipeline. The date of manufacture for this bridge is unknown, but it is likely from the historic era. The bridge once connected to dirt access roads on either side of the canal. The bridge would have spanned approximately 25 feet. The bridge abutments are in poor condition.

The historical resource has not been evaluated for listing on the NRHP/CRHR, however, a preliminary assessment of the resources indicates that it is likely eligible for listing.

Y-17

One prehistoric archaeological isolate, in the form of a broken Franciscan uniface or retouched flake, was identified in the middle of a plowed field (175 feet amsl), not far from two farm complexes

(Figure 4). It is predominantly brown in color with white lines and green portions. The artifact was flagged but not collected. A month later, the flagging was found, but the artifact was not.

The tool exhibits evidence of a bulb of percussion and retouch scars. It measures 56 mm long, 32 mm wide, and is 11 mm thick (Figure 5). It is assumed to be an isolate because no other artifacts or features were found associated with this find. The artifact is approximately 290 feet from the center of the proposed Line 406 Pipeline path.

An isolate is not eligible for listing on the NRHP/CRHR. Its presence, however, might indicate buried archaeological deposits.

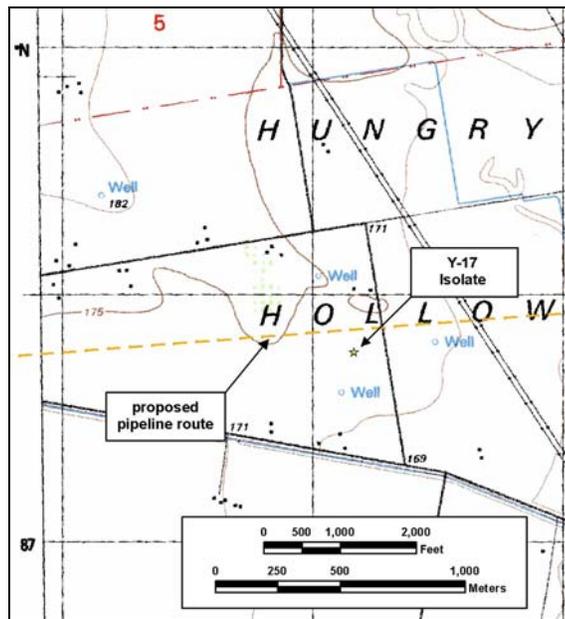


Figure 4. Y-17 location in an unsectioned portion of the Rancho Cañada de Capay land grant, Madison USGS 7.5' Quad.



Figure 5. Dorsal side of the uniface retouched flake.

Y-20

Site Y-20 is an historic site at 30220 County Road 17. The site includes a residence and a barn over 50 years of age. The exact ages of the buildings were not known to the present landowner. The property is presently a pheasant farm.

The residence, which is in fair to poor condition, is approximately 84 feet from the northern edge of CR 17. The residence has undergone much renovation. It has siding consisting of red-painted wood planks that is covered in several places by tar paper.

This second building is situated northwest of the residence and is in fair to poor condition. The siding of the barn comprises red-painted wooden boards (9 inches wide). The eastern façade has two large doors. Only round-headed nails fasten the boards to the frame of the barn. The roof consists of rusted corrugated iron sheets. Renovations and repairs to the barn have been made with sheets of metal and plywood. The barn is presently used to store hay and agricultural equipment. There is a long hedge of prickly pear cactus plants along a wooden fence in front of the residence on the north side of the road. This cactus hedge is part of the cultural landscape and is probably more than 50 years old (Figure 6).

Site Y-20 has not been formally evaluated for its eligibility for listing on the NRHP/CRHR.

Y-21

Site Y-21 consists of the historic alignment of the former Northern Railway Company. The recorded segment is now the Southern Pacific Railroad and actively in use. This segment parallels Interstate 5, and is oriented in a northwest-southeast direction. The tracks sit on a raised bed of ballast made of sub-angular basalt rocks, approximately 2.5 feet high. According to Larkey and Walters (1987:47), railroad construction was started in 1875. It was completed sometime before 1879, as depicted in the Yolo County atlas (Yolo County 1879). The railroad crosses the proposed path of Line 406.

The historical resource has not been evaluated for listing in the NRHP/CRHR, however, a preliminary assessment of the resources indicates that it is likely eligible for listing.



Figure 6. Cactus hedge of Y-21 along the northern side of County Road 17, facing northeast.

6.0 Conclusions and Management Recommendations

Eight sites and one isolate were identified during the fieldwork, which was conducted between December 2006 and March 2007. Two of the sites were already recorded and listed on the Historic Resources Inventory (1986) as examples of late nineteenth and early twentieth century farm buildings. Six of the newly recorded sites are from the historic era, while one isolated artifact is from the prehistoric period. The majority of the historical resources are farm buildings, residences, and irrigation canals.

Based on the proposed project activities and the historical resources identified in the archival and archaeological investigations, the following recommendations are provided. No additional archaeological investigations are necessary unless archaeological resources or human remains are encountered during ground disturbing activities.

- 1) A discovery and monitoring plan should be prepared prior to the start of project implementation. The preparation of a discovery and monitoring plan would provide detailed procedures for the treatment of cultural resources found as a result of accidental discoveries during construction as well as detailed locations for monitoring in potentially sensitive areas within the APE, where cultural resources are most likely to be identified. Mr. Kesner Flores, a Native American contact (see Appendix C), recommended spot monitoring and the preparation of a discovery plan. Arrangements with Mr. Flores should be made to facilitate spot monitoring. The preparation and implementation of a detailed discovery and monitoring plan would minimize potential impacts.
- 2) Inadvertent discoveries are a possibility when conducting earth-disturbing activities. A brief worker education program prior to earth-disturbing activities would train construction workers on how to identify and avoid archaeological resources in the event of inadvertent discoveries.
- 3) It is recommended that all eight of the historical sites and all associated features be avoided. If in the course of project planning it is determined that the project is going to have a direct impact on a historical resource then the site will need to be formally evaluated for the California Register for Historical Places.
- 4) One prehistoric archaeological isolate (Y-17) was identified in an agricultural field outside the APE, 290 feet away from the center of the proposed Pipeline path. No further management is recommended. However, this isolated artifact could be an indication of additional archaeological deposits in this location and that excavation activities could disturb archaeological deposits in this area. It is recommended that a qualified archaeologist monitor any excavation activities within 100 feet of the location of the isolated artifact.

Table 4. Recommendations for cultural resources.

Site #	Description	NRHP/CRHR Status	Recommendation
YOL-HRI-4/106	John Ritchie House & other buildings	Unevaluated	Avoid or evaluate
YOL-HRI-4/114	Herman Richter House & other buildings	Unevaluated	Avoid or evaluate
Y-3	Goodnow Slough	Unevaluated	Avoid or evaluate
Y-6	Dump in drainage	Unevaluated	Outside APE
Y-7	Three barns & two residences	Unevaluated	Avoid or evaluate
Y-9	Hungry Hollow Canal	Unevaluated	Avoid or evaluate
Y-17	Chert uniface or retouched flake	Unevaluated	Monitor within 100 feet of isolate location
Y-20	One house & barn	Unevaluated	Avoid or evaluate
Y-21	Southern Pacific Railroad Section	Unevaluated	Avoid or evaluate

6.1 Unanticipated Discoveries

Should any archaeological materials be discovered during ground-disturbing activities all work within the immediate vicinity should halt until a qualified archaeologist can evaluate the discovery and provide recommendations. Buried historic features could include filled privies, wells, trash and pits, along with concentrations of adobe, stone, or concrete walls or foundations, and concentrations of ceramic, glass, or metal materials. Native American archaeological materials could include obsidian and chert flaked stone tools (such as projectile points and knives), midden (darken soil created culturally from use and containing heat-affected rock, artifacts, animal bones, or shellfish remains), and/or groundstone implements (such as mortars and pestles). Any cultural resources identified during monitoring shall be considered eligible to the National Register of Historic Places until proven otherwise.

6.2 Human Remains

There is also the possibility of encountering human remains either in association with prehistoric occupation sites or separately. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial and Section 5097.99 of the Public Resources Code defines the obtaining or possession of Native American remains or grave goods to be a felony. If human remains are encountered as a result of construction activities, any work in the vicinity should stop and the County Coroner contacted immediately. At the same time, a qualified archaeologist should be contacted to evaluate the situation. If the human remains are Native American in origin, then the Coroner must notify the Native American Heritage Commission within 24 hours of this identification.

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