

APPENDIX G

Cultural Resource Assessment Report (Public)



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HERITAGE

Cultural Resource Assessment Report for the Collinsville 500/230kV Substation Project Contra Costa, Solano, and Sacramento Counties, California

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October 2025

Chronicle Heritage Report Number: 23-567



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This report has been revised for public use by removal of site location information.

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Abstract

Conducted under contract to Insignia Environmental, PaleoWest, LLC dba Chronicle Heritage (Chronicle Heritage) completed a Cultural Resource Assessment supporting LS Power Grid California, LLC's (LSPGC's) Proposed Collinsville 500/230kV Substation Project (Proposed Project) in the Sacramento River Delta region of Contra Costa, Solano, and Sacramento counties in California. The Proposed Project involves constructing a new electrical substation, 500 kilovolt (kV) transmission line, and 230 kV transmission line to increase reliability and renewable generation. The proposed 230 kV transmission line extends from the proposed Collinsville Substation near Collinsville, California to PG&E's existing Pittsburg Substation in Pittsburg, California and includes aboveground and underwater components.

The Proposed Project is subject to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, the Abandoned Shipwreck Act of 1987 (National Park Service [NPS] 1990), and the California Environmental Quality Act (CEQA). The U.S. Army Corps of Engineers (USACE) is the lead federal agency, and the California Public Utilities Commission (CPUC) is the lead CEQA agency. Chronicle Heritage completed this work under contract to Insignia Environmental.

The Proposed Area of Potential Impacts/Effects (API/APE) includes an approximately 4-mile (mi)-long stretch of submerged transmission cable under the Sacramento River, in addition to approximately 1 mile of overhead 230 kV transmission line, and two approximately 1.5-mi-long, single-circuit, 500 kV transmission line segments. The aboveground portion of the Proposed API/APE includes a 150-foot right-of-way corridor and approximately 20 acres for the proposed Collinsville Substation on Stratton Lane in Suisun City, about 1 mile north of the Sacramento River Delta.

For the aboveground portion of the Proposed Project, Chronicle Heritage completed a records search and archival research, informal Native American outreach, and an intensive pedestrian survey.

The pedestrian survey resulted in the identification of six new resources within the Proposed API/APE. Ten previously recorded cultural resources were revisited during the pedestrian survey, including six resources within the Proposed API/APE and four resources within 0.5 mile of the Proposed API/APE. There is one National Register of Historic Places (NRHP)-nominated historic property adjacent to the Proposed API/APE. One of the previously recorded resources, a historic transmission line that is within the Proposed API/APE, is recommended eligible for listing in the NRHP or California Register of Historical Resources (CRHR). The six new resources that were recorded are not being recommended as eligible for listing in the NRHP or CRHR. The Proposed Project will not result in direct or indirect effects to the NRHP-nominated resource or to the transmission line that is recommended as eligible for NRHP/CRHR. A supplemental records search was conducted and is documented in Attachment H.

For the submerged portion of the Proposed Project, Chronicle Heritage's Maritime Division analyzed data from an intensive submerged cultural resources remote sensing survey; coordinated with the State of California's Underwater Archaeologist; performed a literature review and archival research; and performed an analysis of magnetometer, side-scan sonar, and subbottom profiler data collected during the survey. Results of the submerged cultural resources records search, archival research, survey, and analysis are presented in Attachment A.

The built environment was surveyed and assessed during a separate pedestrian survey. The results are presented in the Built Environment Survey and Assessment Report in Attachment F. In

addition, a detailed geoarchaeological and buried site sensitivity analysis of the Proposed API/APE was prepared and is provided in Attachment G.

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Appendices

- Attachment A. Maritime Cultural Resources Assessment Report
- Attachment C. NAHC Correspondence

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Introduction

The LS Power Grid California, LLC (LSPGC) Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project) is being constructed due to increasing demands on the California electric grid. The Proposed Project is subject to compliance with California Environmental Quality Act (CEQA) statutes and guidelines, and it requires approval from California Public Utilities Commission (CPUC), the lead agency under CEQA, of the assessment of the undertaking's impact on cultural resources. Since the Proposed Project construction crosses a waterway, it must comply with authorization from the Secretary of the Army, acting through the Corps of Engineers (COE), for the discharge of dredged or fill material into all waters of the United States as stipulated in Section 404 of the Clean Water Act. The environmental review of the Proposed Project, therefore, also falls under the jurisdiction of the National Environmental Policy Act (NEPA) and the Section 106 review as set out by the National Historic Preservation Act (NHPA). The COE is the approval agency for the Section 106 review for this Proposed Project.

Chronicle Heritage completed a records search, literature review, Native American outreach, terrestrial archaeological survey, resource evaluations, and maritime submerged survey in support of the Proposed Project in Contra Costa, Solano, and Sacramento counties, California (Figure 1-1). This report presents the results of the records search, a review of historical maps and aerial photographs, terrestrial cultural resources survey results, and evaluations of sixteen properties identified within or immediately adjacent to the Proposed Area of Potential Impacts (API)/Area of Potential Effects (APE). The cultural resources assessment for the underwater portion of the Proposed Project is presented in Attachment A. The purpose of this investigation is to determine the potential for the Proposed Project to adversely affect historic properties as defined by NHPA or historical resources as defined by CEQA.

Project Description

The Proposed Project is located in the Sacramento River Delta region of Contra Costa, Solano, and Sacramento counties in California (Figures 1-1 and 1-2). It is found in sections 22–24 and 26–27 of Township 3 North, Range 1 East in the Antioch North, California (United States Geological Survey [USGS] 1979) and Honker Bay, California (USGS 1981) USGS 7.5-minute quadrangles (Figure 1-3 through Figure 1-26).¹ The LSPGC Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project) is designed to address multiple overloads on the 230 kV corridor between PG&E's existing Contra Costa and Newark substations. The Proposed Project would also provide additional supply from the 500 kV Vaca-Dixon Transmission System into the northern Greater Bay Area to increase the reliability of the electric grid and advance additional renewable energy generation in the northern Greater Bay Area. This needed upgrade to the California electric grid was identified in the California Independent System Operators (CAISO) 2021-2022 Transmission Plan. The objective of the Transmission Plan was to fulfill the requirement to add approximately 1,000 megawatts of new resources per year in the state over the 10-year planning period. CAISO's Policy-Driven Need Assessment identified the Proposed Project as necessary to ensure deliverability of resources to meet policy goals and the resource adequacy needs of the state. The Policy-Driven Need Assessment is an iterative process, encompassing three studies: a reliability assessment, an on-peak deliverability assessment, and an off-peak deliverability assessment. The key objectives of

¹ The latest Antioch North USGS 7.5-minute quadrangle that is available is dated 1995 and the latest Honker Bay USGS 7.5 minute quadrangle is dated 1985.

the Policy-Driven Need Assessment are to assess the transmission impacts of portfolio resources, identify necessary upgrades to ensure reliability and minimize excessive curtailment, and inform future portfolio development. The Proposed Project would address transmission constraints in the base portfolio (i.e., Cayetano-North Dublin 230 kV Transmission Line, Lone Tree-USWP-JRW-Cayetano 230 kV Transmission Line, and Las Positas-Newark 230 kV Transmission Line) identified by the assessment.

The main component of the Proposed Project, the LSPGC Collinsville Substation, is located near the unincorporated community of Collinsville, which is in southeastern Solano County. Other components of the Proposed Project would cross Solano, Sacramento, and Contra Costa counties in California: two single-circuit 500 kV transmission lines would be extended to interconnect PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line (PG&E 500 kV Interconnection) to the LSPGC Collinsville Substation, a new double-circuit 230 kV transmission line (the LSPGC 230 kV Transmission Line) would travel from the LSPGC Collinsville Substation, travel under the Delta waterways, and continue in an underground configuration before connecting to PG&E's existing Pittsburg Substation in the City of Pittsburg in northern Contra Costa County. The Proposed Project is in Sections 22-24 and 26-27 of Township 3 North, Range 1 East in the Antioch North, California (USGS 1978) and Honker Bay, California (USGS 1981) U.S. Geological System (USGS) 7.5-minute quadrangles (Figure 1-2, Figure 1-3, Figure 1-4).

The main components of the Proposed Project include the following:

- Constructing a new 500/230 kV substation, the LSPGC Collinsville Substation. The approximate size of the substation is 11 acres.
- Constructing two new, approximately 1.2-mile-long, single-circuit 500 kV transmission line segments extending to interconnect (or "loop") PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line into the LSPGC Collinsville Substation. Approximately ten lattice steel towers (LSTs) and four three-pole tubular steel pole (TSP) structures would each be installed. The LSTs would be installed on up to four pier foundations and the TSPs would be installed on one pier foundation each. Each pier foundation would be constructed approximately 4 to 8 feet in diameter and approximately 40 feet in depth.
- Constructing a new approximately 5.8-mile-long, double-circuit 230 kV transmission line to connect the LSPGC Collinsville Substation to PG&E's existing Pittsburg Substation.
 - Overhead segment: An approximately 1-mile-long double-circuit line connecting the LSPGC Collinsville Substation to the submarine segment. This segment would be supported by approximately six pier-mounted or direct embedded tubular steel poles (TSPs) and two pier-mounted TSP overhead riser structures. The 6- to 12-foot diameter pier-mounted TSPs would be embedded to a depth of 15 to 50 feet and the pier-mounted riser structures would have a typical foundation diameter of 10 feet and be embedded to a depth of approximately 55 feet.
 - Submarine segment: Beginning at the overhead riser structures, up to six approximately 4.5-mile-long submarine cables would be installed between 6 and 15 feet below the river's sediment surface. The submarine cables would terminate at an onshore underground utility vault in the City of Pittsburg.

- Underground segment: Beginning at the onshore underground utility vault, the submarine cables would transition to underground transmission cables which would travel through two separate duct banks, each approximately 0.3-mile long. The underground transmission cables would connect to two new riser structures prior to entering and terminating at PG&E’s existing Pittsburg Substation.
- Extending and connecting an existing PG&E 12 kV distribution line approximately 0.9 mile to the LSPGC Collinsville Substation. Approximately twenty-one wood poles would be installed to carry the line. Pole installation would cause a disturbance measuring 3 to 4 feet in diameter and 6 to 10 feet in depth.
- Constructing two new telecommunications paths to the LSPGC Collinsville Substation—a new microwave tower would be constructed at the substation and a new fiber optic line would be installed between existing fiber in the City of Pittsburg and the substation.² These two lines would be installed by their owners (e.g., AT&T, Comcast) generally within existing streets using the horizontal directional drilling (HDD) method of construction from a residential neighborhood located east of PG&E’s existing Pittsburg Substation to a new fiber hub installed adjacent to PG&E’s existing Pittsburg Substation and the new onshore underground utility vault associated with the LSPGC 230 kV Underground Segment. The utility vault would be comprised of four separate transition joint bays each measuring approximately 45 feet long, 10 feet wide, and 8 feet deep. The excavation to install the utility vault would be approximately 15 feet in depth.
- Constructing three new PG&E 500 kV transposition structures, removing two existing lattice steel poles (LSPs), and replacing two existing lattice steel towers with two new three-pole dead-end tubular steel poles along PG&E’s existing Vaca Dixon-Tesla 500 kV Transmission Line. The piers for the foundations associated with the 500 kV transposition structures would be embedded between 20 and 40 feet.³

In addition to the ground disturbances resulting from the construction of the Proposed Project components, other disturbances would be from the following construction related features:

- Construction of temporary and permanent access roads: approximately 16-foot-wide temporary access roads would be established during construction to access construction areas. Prior to use, vegetation would be removed, and the area would be bladed to establish a safe path for construction equipment and vehicles. Extensive grading and/or road base placement would not be anticipated along temporary access roads. Two new permanent driveways would be constructed to connect the primary entrance of the LSPGC Collinsville Substation to Stratton Lane and connect to PG&E’s equipment within the substation perimeter.
- Staging areas: In addition to the LSPGC Collinsville Substation property, it is anticipated that five staging areas would be used to support construction. Three staging areas would be in the Collinsville area and used for longer-term construction staging needs for work on the LSPGC Collinsville Substation, LSPGC 230 kV Overhead Segment, LSPGC 230 kV

² The microwave tower would be constructed, operated, and maintained by PG&E.

³ A supplemental cultural resources survey was conducted by ASM Affiliates in April 2025 covering the transposition structure locations. The results of those surveys are documented in Attachment H and these features are not discussed further in this document.

Submarine Segment, PG&E 500 kV Interconnection, and PG&E 12 kV Distribution Line. Two staging areas would be located adjacent to PG&E's existing Pittsburg Substation in the City of Pittsburg and would be used for longer term construction staging needs for work on the LSPGC 230 kV Submarine Segment, LSPGC 230 kV Underground Segment, LSPGC Telecommunications Line, and PG&E's modifications to its existing Pittsburg Substation. Staging area preparation would typically involve clearing, topsoil salvage, grubbing, and limited grading.

- Work areas and pulling sites: various work areas and pull sites would be prepared as needed to complete construction. Work area preparation would typically involve clearing, topsoil salvage, grubbing, and grading.

Area of Potential Impacts/Area of Potential Effects

A proposed Area of Potential Impacts/Area of Potential Effects (API/APE) was established for the Proposed Project. The Proposed API/APE included all of the Proposed Project components and the rights-of-way (ROWs) to allow for adjustments to the placement of Proposed Project components, especially work areas, pull areas, and staging areas. The horizontal Proposed API/APE map is presented in Figures 1-3 to 1-14; the vertical Proposed API/APE map is presented in Figures 1-15 to 1-26.

The location for the LSPGC Collinsville Substation is off Stratton Lane just northeast of Collinsville, Solano County, California (Figures 1-8 and 1-20). The site is currently undeveloped and is part of the Shiloh I Wind Power Plant area. The Sacramento River flows east to west, bisecting the northern and southern portions of the Proposed API/APE.

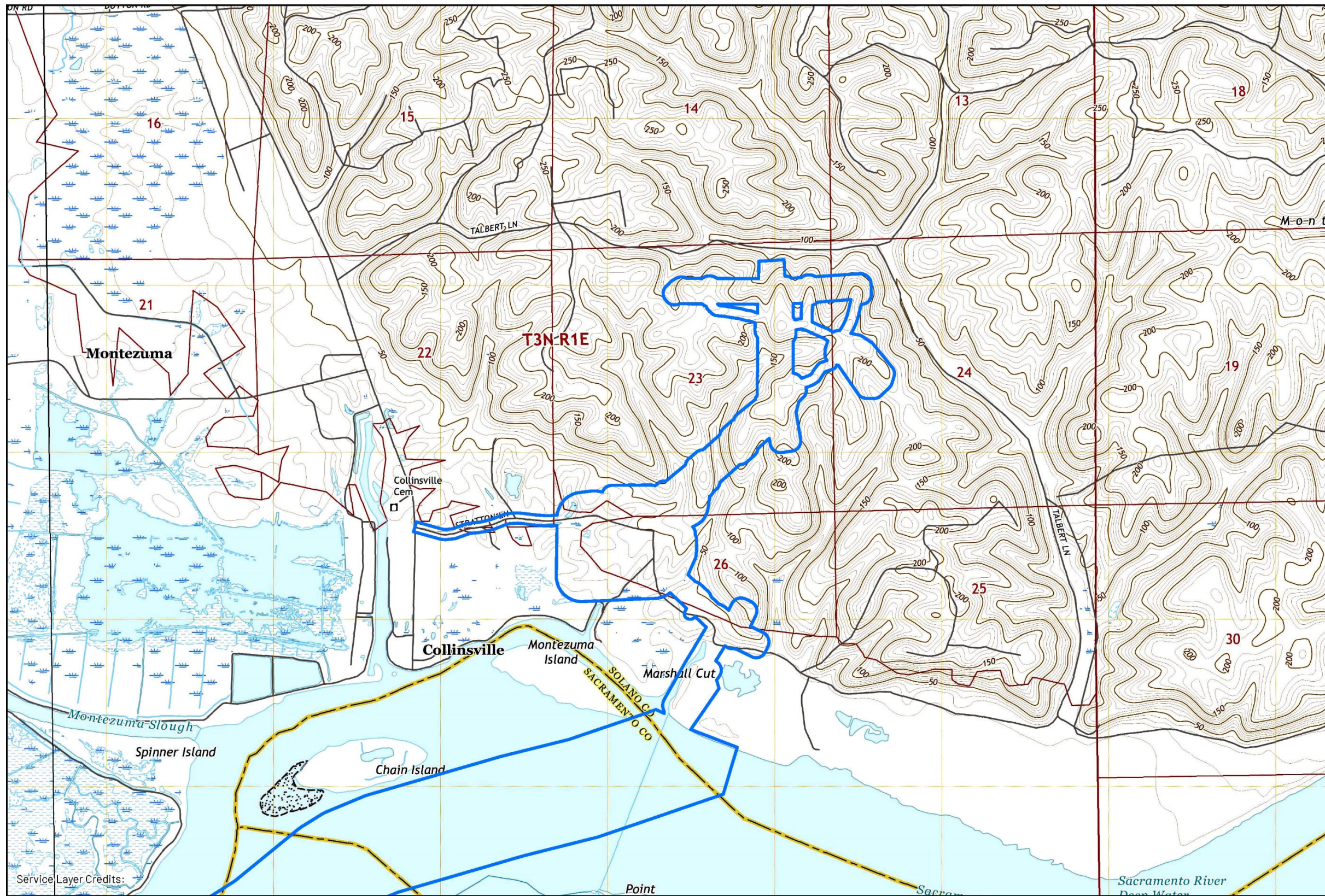
The PG&E 500 kV Interconnection segments are each proposed to be approximately 1.2-miles long (Figure 1-3 to 1-8). Structures would be up to 155 feet tall and reach depths of up to 40 feet. The 500 kV interconnection ROW is planned to be 150 to 350 feet wide. The LSPGC 230 kV Overhead Segment is proposed to be approximately 1-mile long between the LSPGC Collinsville Substation and the proposed overhead riser structures on the north shore (Figure 1-6, 1-10, and 1-11). Structures would be up to 150-feet tall and reach depths of up to 55 feet. The overhead 230 kV transmission line ROW is planned to be 100 to 230 feet wide.

As mentioned above, the submarine cable route is proposed to be approximately 4.5 miles long, running northeast-to-southwest across the Sacramento River Delta (Figure 1-11 to 1-13; Figure 1-23 to 1-25). The submarine cable is proposed to be installed beneath the bay and riverbed to a depth of approximately 6 to 15 feet using jetting technology. At the north shore, along each cable path a trench would be excavated from the shoreline to a point approximately 50 feet waterward of the mean high-water line. The cables would be installed below ground between the Delta's northern shoreline and two proposed onshore riser structures, a distance of approximately 250 feet. It is anticipated that each trench between the northern shoreline and the overhead riser structures would be approximately 5 feet wide and up to approximately 5 feet deep. Near the southern edge of the river just outside of PG&E's existing Pittsburg Substation, an onshore underground utility vault would receive the submarine cables. Trenching would be required between the underground utility vault and the mean high-water line (approximately 70 to 80 feet) and may also be required up to approximately 30 feet waterward of the mean high water line. It is anticipated that each trench between the southern shoreline and the underground utility vault, would be approximately 5 feet wide and up to approximately 5 feet deep. From the utility vault, two underground transmission cables would travel through two approximately 0.3-mile-long duct banks. Trenching for the duct



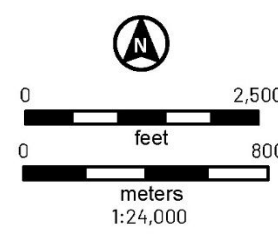
Figure 1-1. Proposed Project vicinity map.

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Project Location
Collinsville Substation
USGS 7.5' Quadrange:
Antioch North, CA (2021)
T3N R1E, Secs 22-24; Wetlands
UTM Zone 10, NAD 83, MDBM

Proposed API/APE



Map Location



Figure 1-2a. Proposed Project location map.

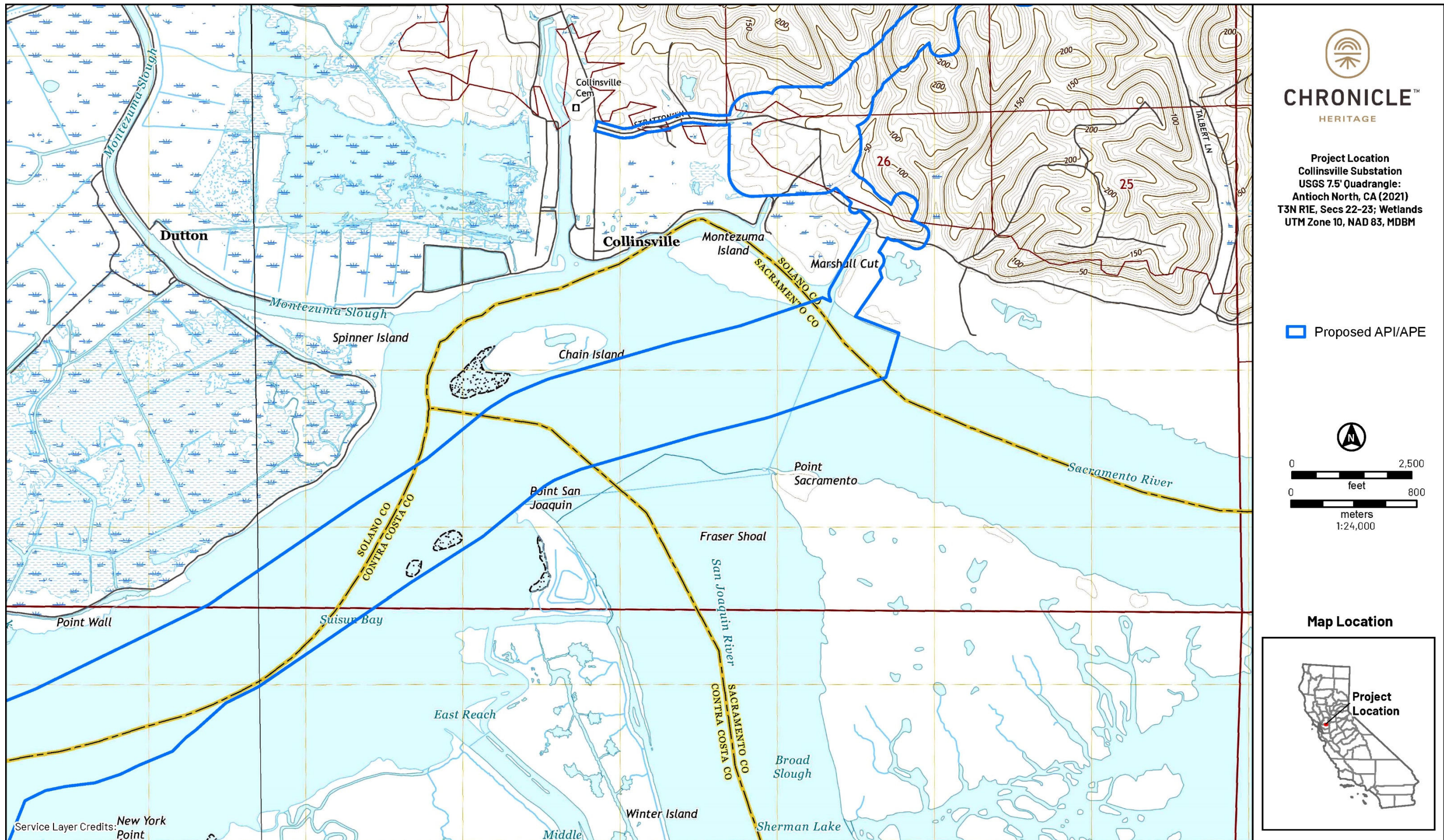


Figure 1-2b. Proposed Project location map.

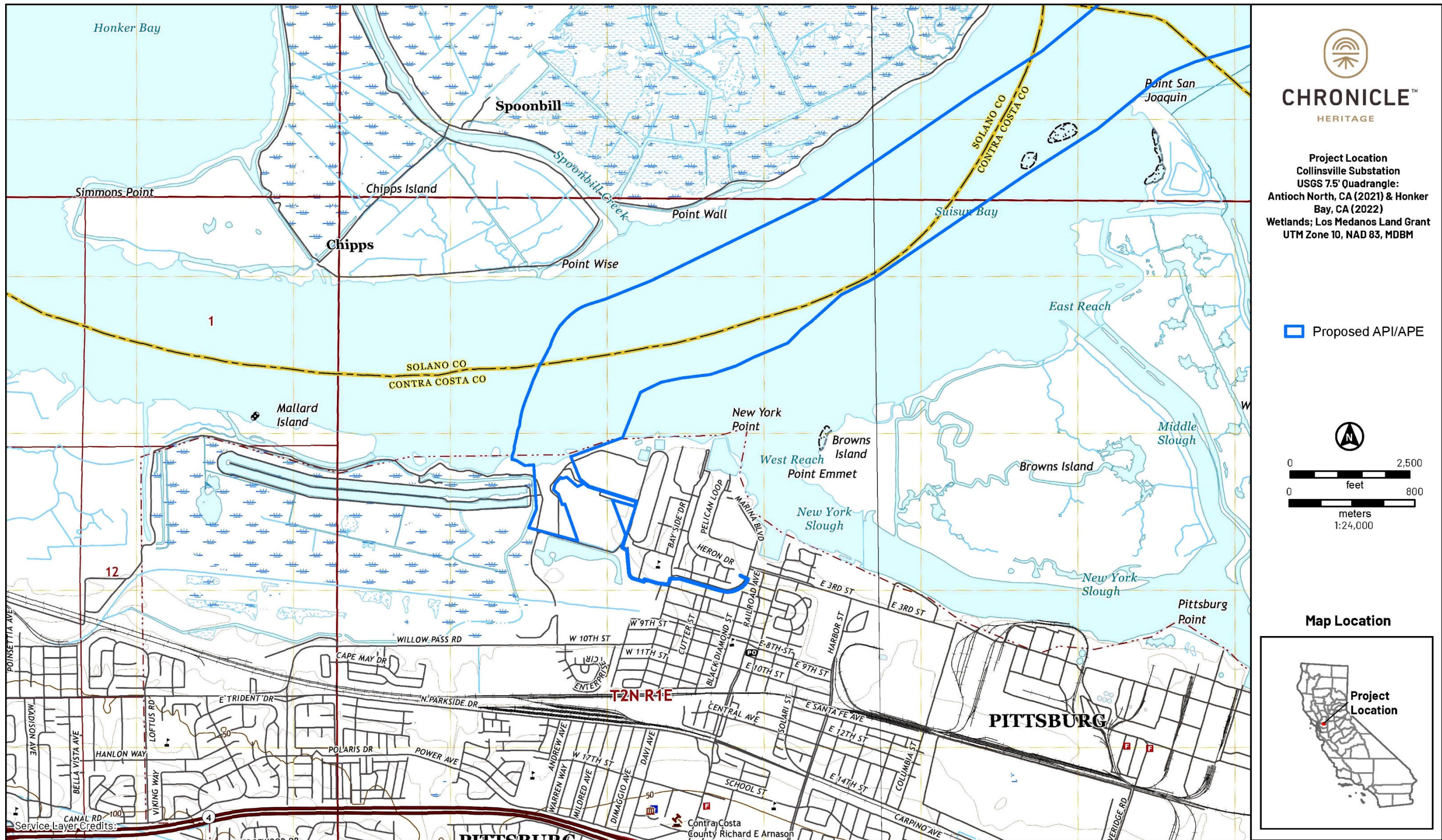


Figure 1-2c. Proposed Project location map.



Figure 1-3. Horizontal Proposed API/APE detail map (1 of 12).

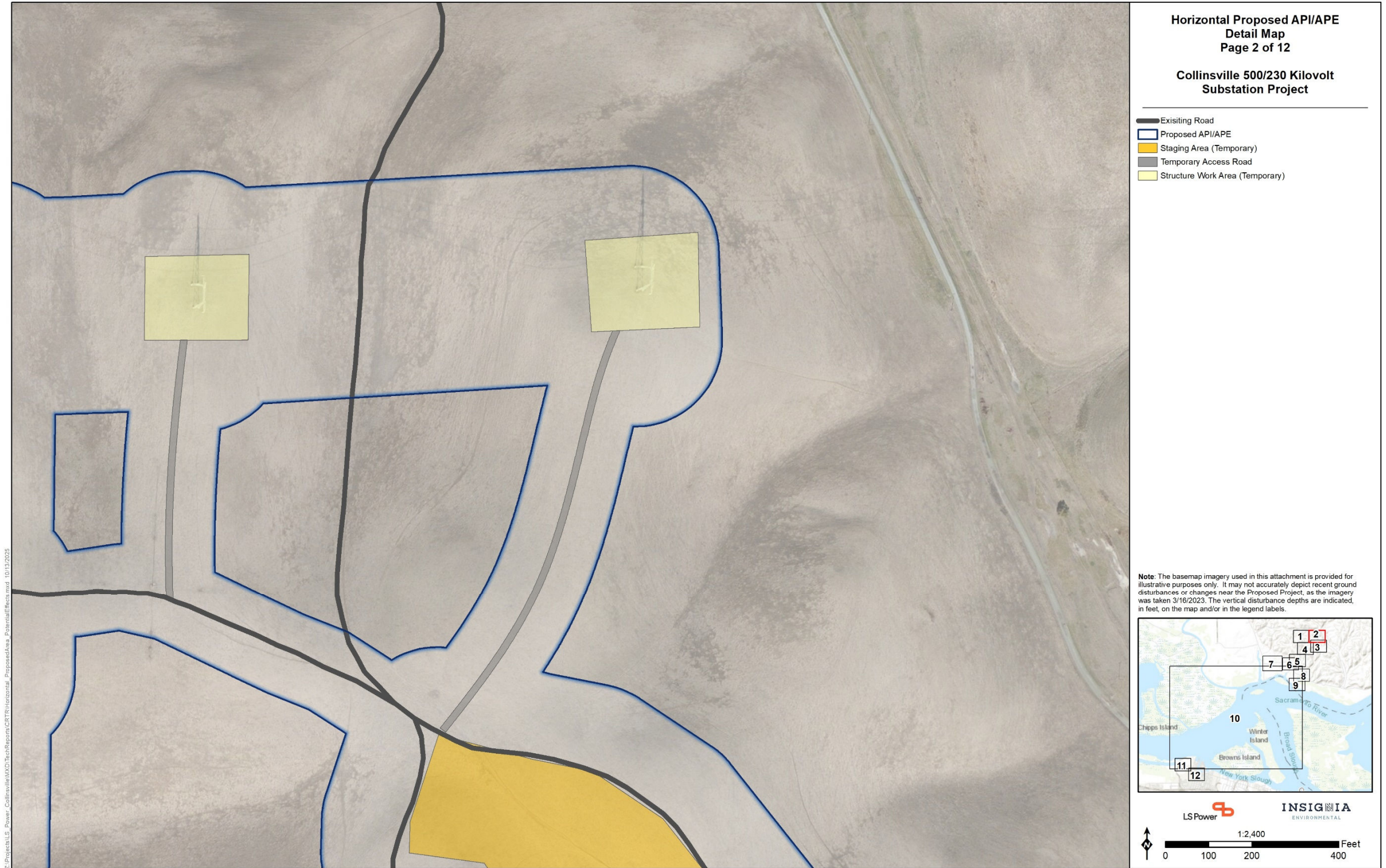


Figure 1-4. Horizontal Proposed API/APE detail map (2 of 12).



Figure 1-5. Horizontal Proposed API/APE detail map (3 of 12).



Figure 1-6. Horizontal Proposed API/APE detail map (4 of 12).



Figure 1-7. Horizontal Proposed API/APE detail map (5 of 12).



Figure 1-8. Horizontal Proposed API/APE detail map (6 of 12).



Figure 1-9. Horizontal Proposed API/APE detail map (7 of 12).

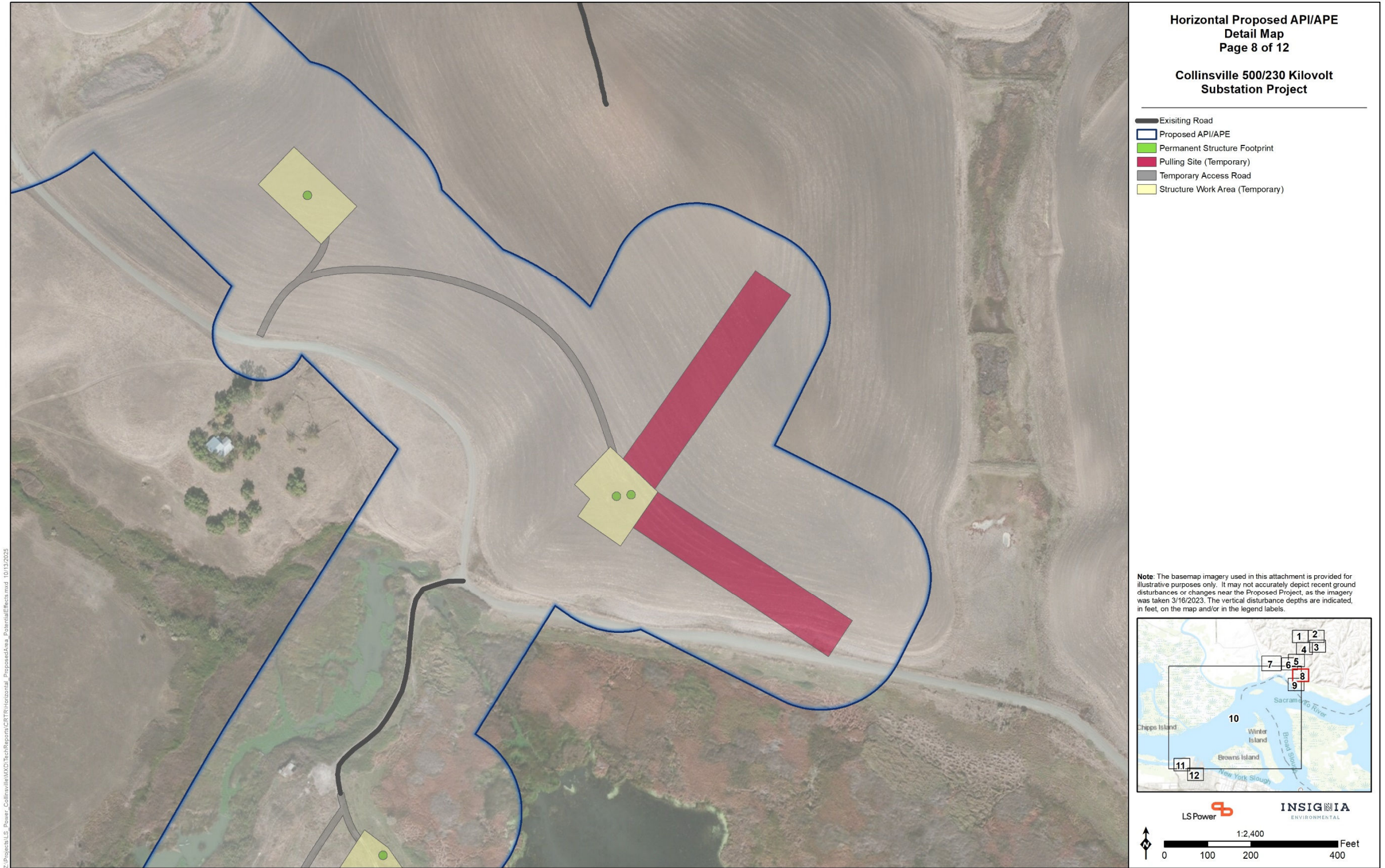


Figure 1-10. Horizontal Proposed API/APE detail map (8 of 12).



Figure 1-11. Horizontal Proposed API/APE detail map (9 of 12).

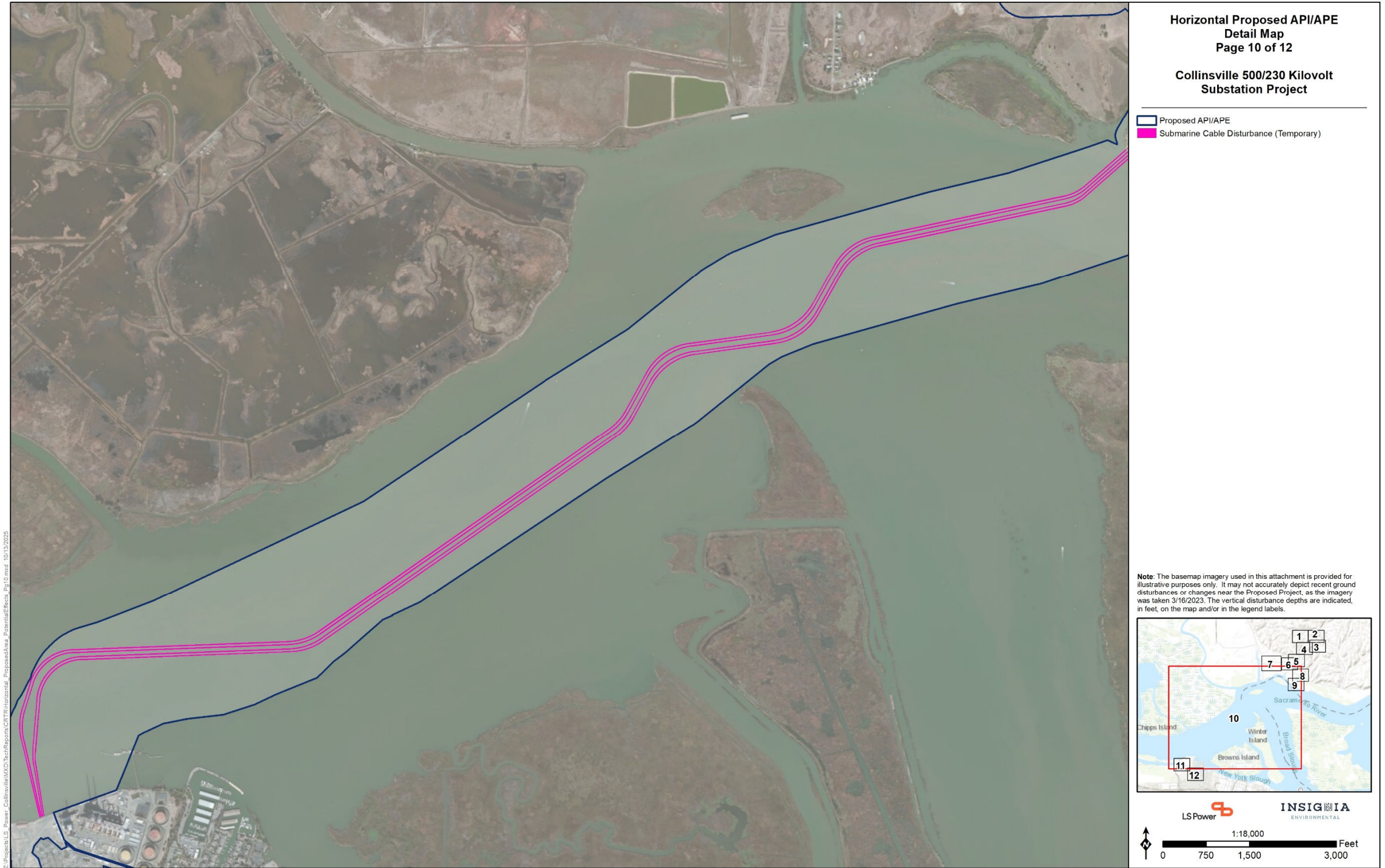


Figure 1-12. Horizontal Proposed API/APE detail map (10 of 12).



Figure 1-13. Horizontal Proposed API/APE detail map (11 of 12).



Figure 1-14. Horizontal Proposed API/APE detail map (12 of 12).



Figure 1-15. Vertical Proposed API/APE detail map (1 of 12).

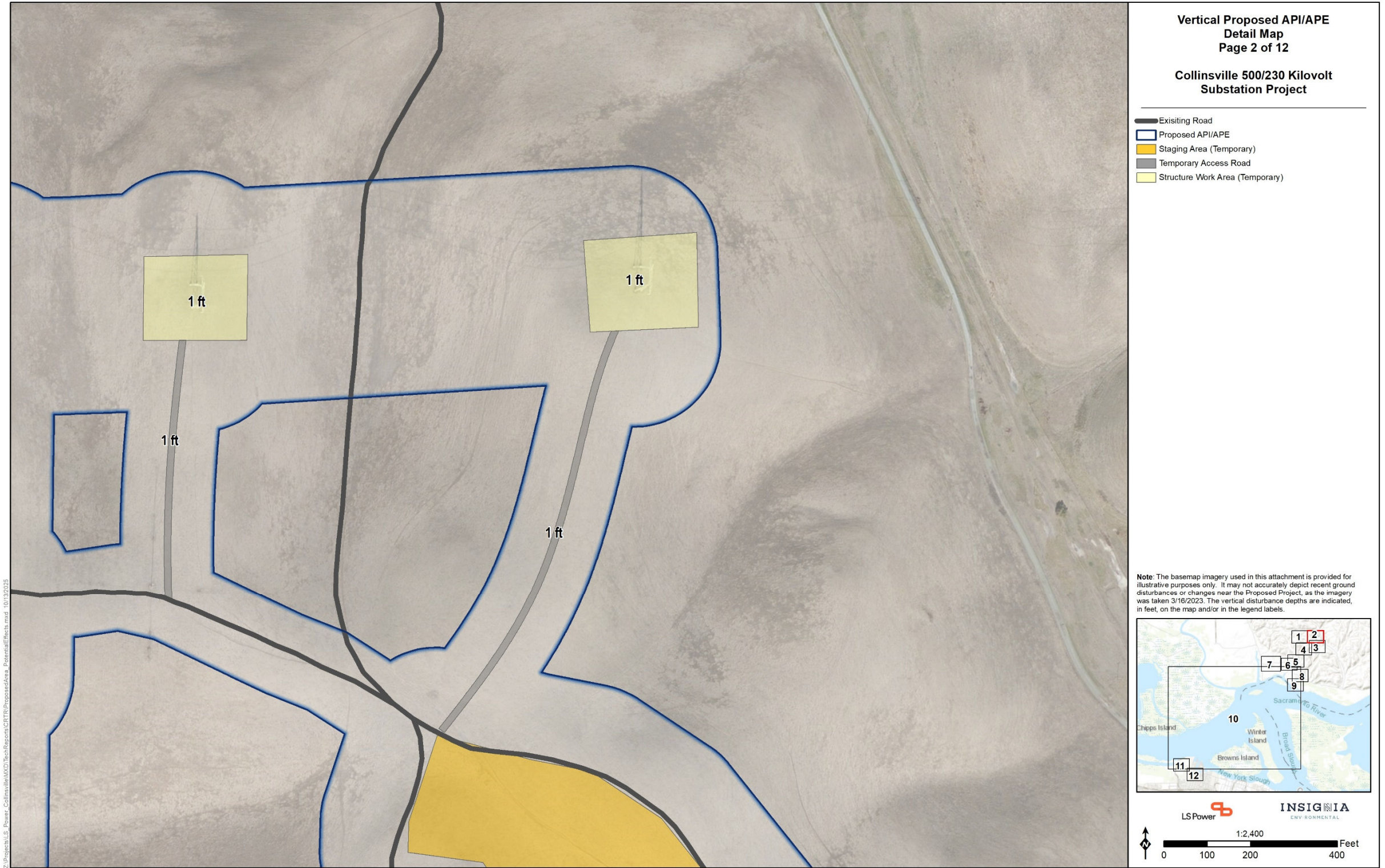


Figure 1-16. Vertical Proposed API/APE detail map (2 of 12).



Figure 1-17. Vertical Proposed API/APE detail map (3 of 12).



Figure 1-18. Vertical Proposed API/APE detail map (4 of 12).

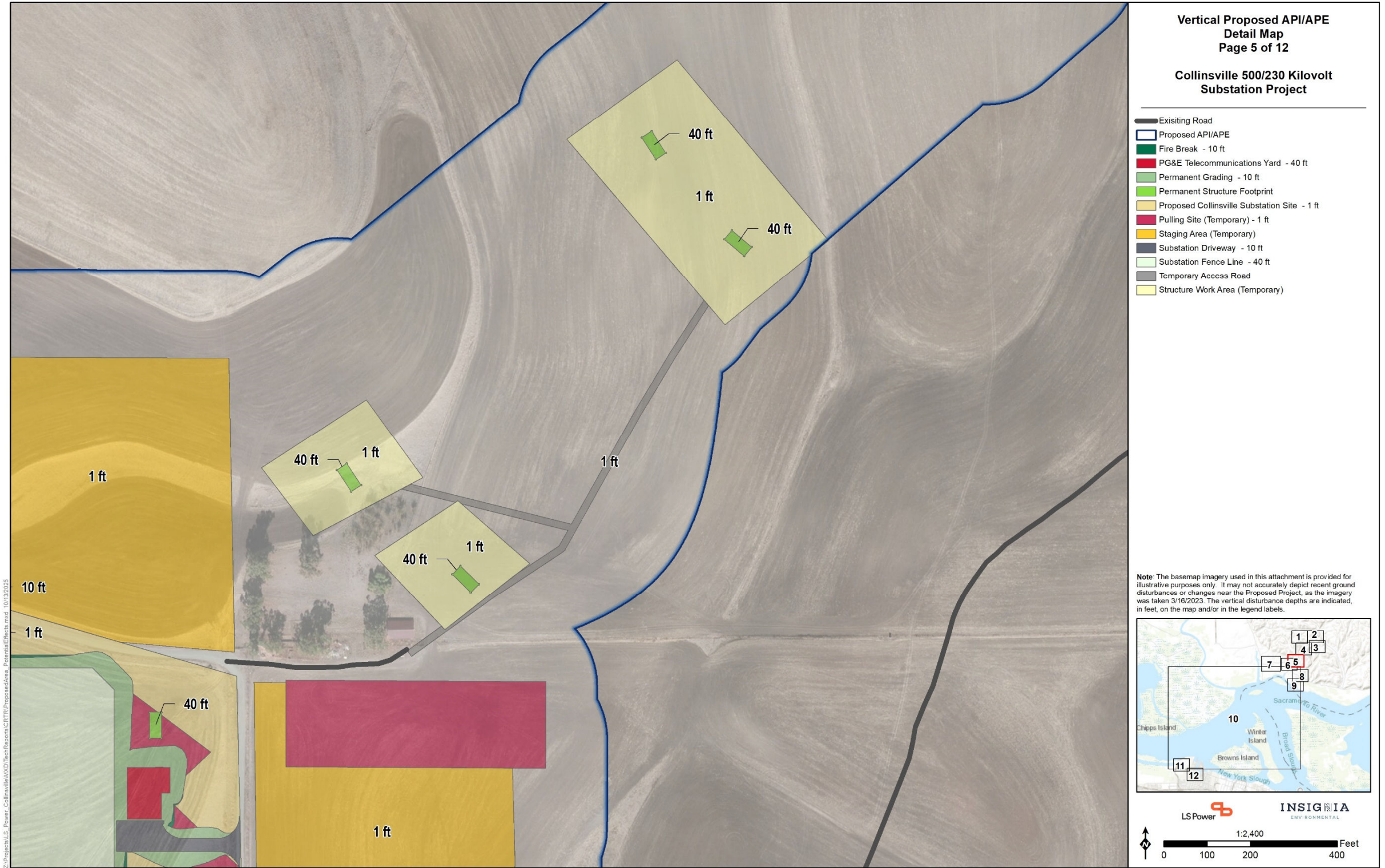


Figure 1-19. Vertical Proposed API/APE detail map (5 of 12).



Figure 1-20. Vertical Proposed API/APE detail map (6 of 12).



Figure 1-21. Vertical Proposed API/APE detail map (7 of 12).

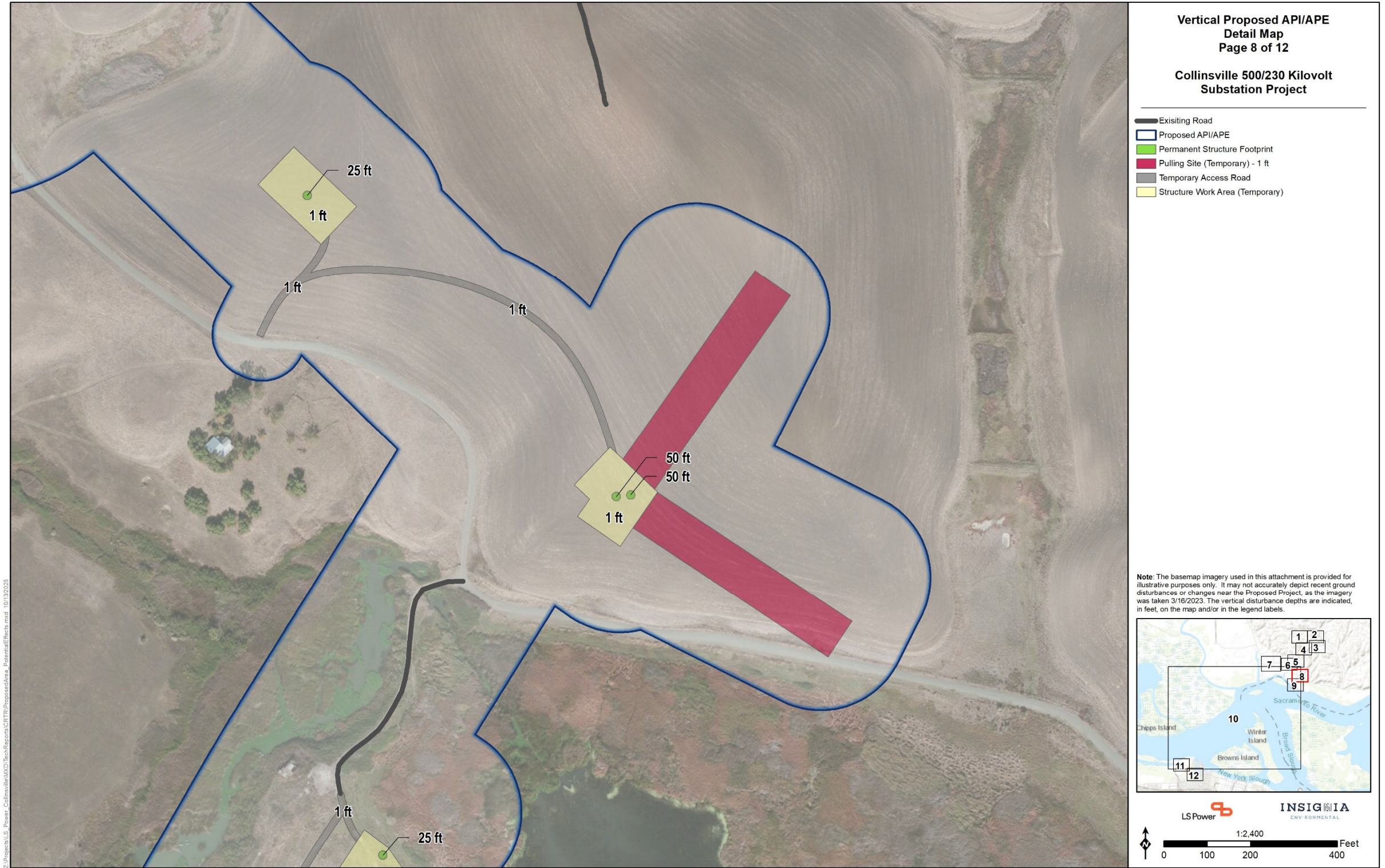


Figure 1-22. Vertical Proposed API/APE detail map (8 of 12).



Figure 1-23. Vertical Proposed API/APE detail map (9 of 12).

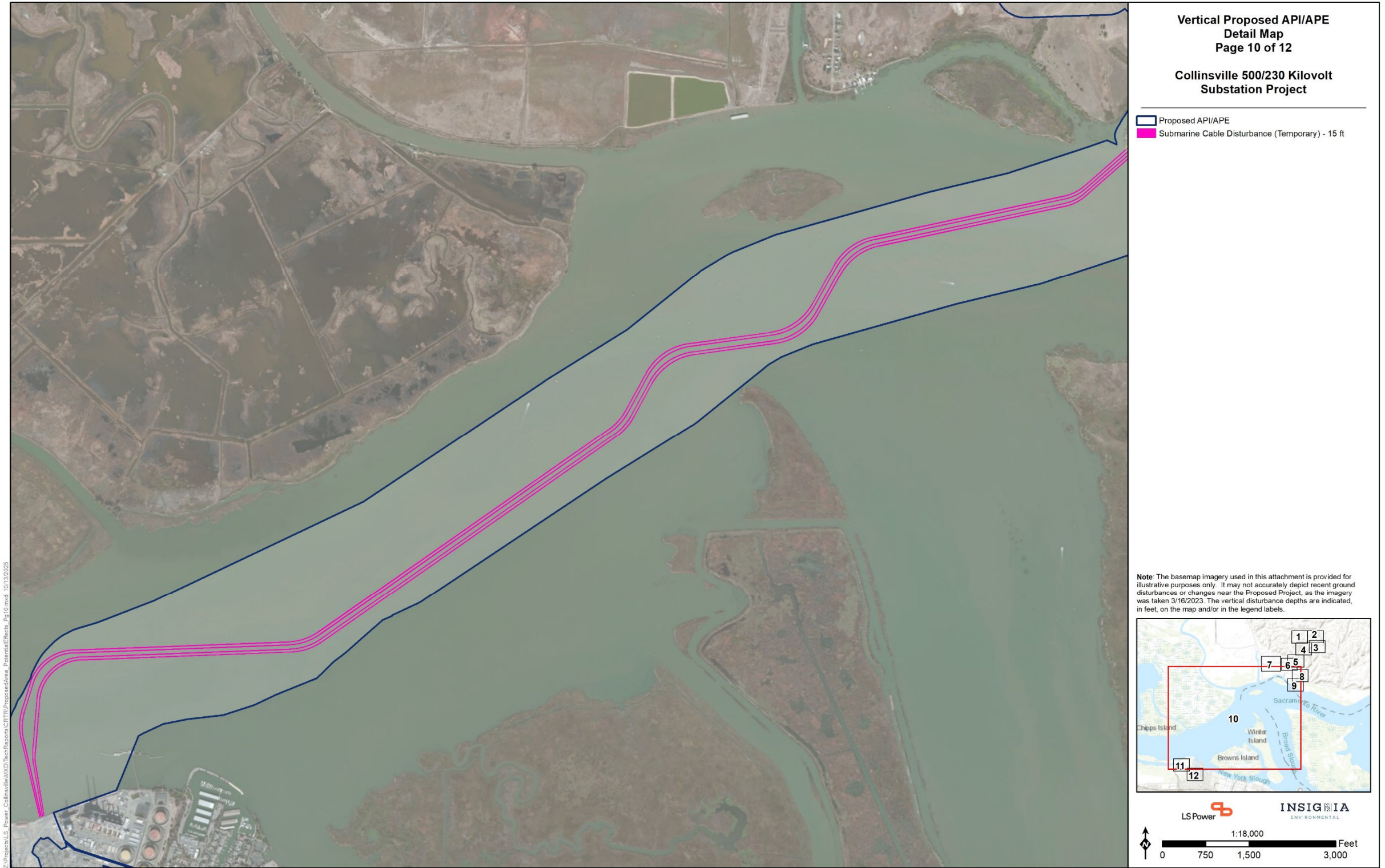


Figure 1-24. Vertical Proposed API/APE detail map (10 of 12).



Figure 1-25. Vertical Proposed API/APE detail map (11 of 12).



Figure 1-26. Vertical Proposed API/APE detail map (12 of 12).

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banks would reach a depth of up to 6 feet. The underground transmission cables would connect to two new riser structures prior to entering and terminating at PG&E's existing Pittsburg Substation. The riser structures would be up to 100 feet tall and have an embedment depth of up to 40 feet.

Regulatory Context

The Proposed Project is subject to compliance with CEQA statutes and guidelines, and it requires approval from the CPUC. As the responsible agent for making and enforcing regulation of the state's public utilities and the lead agency for this Proposed Project under CEQA, the CPUC is also responsible for assessing the undertaking's impact on cultural resources. Since the Proposed Project construction crosses a waterway it must comply with authorization from the Secretary of the Army, acting through the COE, for the discharge of dredged or fill material into all waters of the United States as stipulated in Section 404 of the Clean Water Act. The environmental review of the Proposed Project, therefore, also falls under the jurisdiction of Section 106 review in accordance with NHPA. The COE is the approval agency for the Section 106 review for this Proposed Project.

Federal

Section 404 of the Clean Water Act

(a) The Secretary may issue permits, after notice and opportunity for public hearings for the discharge of dredged or fill material into the navigable waters at specified disposal sites. Not later than the fifteenth day after the date an applicant submits all the information required to complete an application for a permit under this subsection, the Secretary shall publish the notice required by this subsection.

(b) Subject to subsection (c) of this section, each such disposal site shall be specified for each such permit by the Secretary:

(1) through the application of guidelines developed by the Administrator, in conjunction with the Secretary, which guidelines shall be based upon criteria comparable to the criteria applicable to the territorial seas, the contiguous zone, and the ocean under section 403(c), and

(2) in any case where such guidelines under clause (1) alone would prohibit the specification of a site, through the application additionally of the economic impact of the site on navigation and anchorage.

(c) The Administrator is authorized to prohibit the specification (including the withdrawal of specification) of any defined area as a disposal site, and he is authorized to deny or restrict the use of any defined area for specification (including the withdrawal of specification) as a disposal site, whenever he determines, after notice and opportunity for public hearings, that the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. Before making such determination, the Administrator shall consult with the Secretary. The Administrator shall set forth in writing and make public his findings and his reasons for making any determination under this subsection.

(d) The term "Secretary" as used in this section means the Secretary of the Army, acting through the Chief of Engineers.

(e)

(1) In carrying out his functions relating to the discharge of dredged or fill material under this section, the Secretary may, after notice of opportunity for public hearing, issue general permits on a State, regional, or nationwide basis for any category of activities involving discharges of dredged or fill material if the Secretary determines that the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effects on the environment. Any general permit issued under this subsection shall

(A) be based on the guidelines described in subsection (b)(1) of this section, and

(B) set forth the requirements and standards which shall apply to any activity authorized by such general permit.

(2) No general permit issued under this subsection shall be for a period of more than five years after the date of its issuance and such general permit may be revoked or modified by the Secretary if, after opportunity for public hearing, the Secretary determines that the activities authorized by such general permit have an adverse impact on the environment or such activities are more appropriately authorized by individual permits.

(f)

(1) Except as provided in paragraph (2) of this subsection, the discharge of dredge or fill material -

(A) from normal farming, silviculture, and ranching activities such as plowing, seeding, cultivating, minor drainage, harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices;

(B) for the purpose of maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, and bridge abutments or approaches, and transportation structures;

(C) for the purpose of construction or maintenance of farm or stock ponds or irrigation ditches, or the maintenance of drainage ditches;

(D) for the purpose of construction of temporary sedimentation basins on a construction site which does not include placement of fill material into the navigable waters;

(E) for the purpose of construction or maintenance of farm roads or forest roads, or temporary roads for moving mining equipment, where such roads are constructed and maintained, in accordance with best management practices, to assure that flow and circulation patterns and chemical and biological characteristics of the navigable waters are not impaired, that the reach of the navigable waters is not reduced, and that any adverse effect on the aquatic environment will be otherwise minimized;

(F) resulting from any activity with respect to which a State has an approved program under section 1288(b)(4) of this title which meets the requirements of subparagraphs (B) and (C) of such section, is not prohibited by or otherwise subject to regulation under this section or section 1311(a) or 1342 of this title (except for effluent standards or prohibitions under section 1317 of this title).

(2) Any discharge of dredged or fill material into the navigable waters incidental to any activity having as its purpose bringing an area of the navigable waters into a use to which it was not previously subject, where the flow or circulation of navigable waters may be impaired or the reach of such waters be reduced, shall be required to have a permit under this section.

(g)

(1) The Governor of any State desiring to administer its own individual and general permit program for the discharge of dredged or fill material into the navigable waters (other than those waters which are presently used, or are susceptible to use in their natural condition or by reasonable improvement as a means to transport interstate or foreign commerce shoreward to their ordinary high water mark, including all waters which are subject to the ebb and flow of the tide shoreward to their mean high water mark, or mean higher high water mark on the west coast, including wetlands adjacent thereto), within its jurisdiction may submit to the Administrator a full and complete description of the program it proposes to establish and administer under State law or under an interstate compact. In addition, such State shall submit a statement from the attorney general (or the attorney for those State agencies which have independent legal counsel), or from the chief legal officer in the case of an interstate agency, that the laws of such State, or the interstate compact, as the case may be, provide adequate authority to carry out the described program.

(2) Not later than the tenth day after the date of the receipt of the program and statement submitted by any State under paragraph (1) of this subsection, the Administrator shall provide copies of such program and statement to the Secretary and the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service.

(3) No later than the ninetieth day after the date of the receipt by the Administrator of the program and statement submitted by any State, under paragraph (1) of this subsection, the Secretary and the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service, shall submit any comments with respect to such program and statement to the Administrator in writing.

(h)

(1) Not later than the one-hundred-twentieth day after the date of the receipt by the Administrator of a program and statement submitted by any State under paragraph (1) of this subsection, the Administrator shall determine, taking into account any comments submitted by the Secretary and the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service, pursuant to subsection (g) of this section, whether such State has the following authority with respect to the issuance of permits pursuant to such program:

(A) To issue permits which -

(i) apply, and assure compliance with, any applicable requirements of this section, including, but not limited to, the guidelines established under subsection (b)(1) of this section, and sections 307 and 403 of this Act;

(ii) are for fixed terms not exceeding five years; and

(iii) can be terminated or modified for cause including, but not limited to, the following:

(I) violation of any condition of the permit;

(II) obtaining a permit by misrepresentation, or failure to disclose fully all relevant facts;

(III) change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.

(B) To issue permits which apply, and assure compliance with, all applicable requirements of section 308 of this Act, or to inspect, monitor, enter, and require reports to at least the same extent as required in section 308 of this Act.

(C) To assure that the public, and any other State the waters of which may be affected, receive notice of each application for a permit and to provide an opportunity for public hearing before a ruling on each such application.

(D) To assure that the Administrator receives notice of each application (including a copy thereof) for a permit.

(E) To assure that any State (other than the permitting State), whose waters may be affected by the issuance of a permit may submit written recommendation to the permitting State (and the Administrator) with respect to any permit application and, if any part of such written recommendations are not accepted by the permitting State, that the permitting State will notify such affected State (and the Administrator) in writing of its failure to so accept such recommendations together with its reasons for so doing.

(F) To assure that no permit will be issued if, in the judgement of the Secretary, after consultation with the Secretary of the department in which the Coast Guard is operating, anchorage and navigation of any of the navigable waters would be substantially impaired thereby.

(G) To abate violations of the permit or the permit program, including civil and criminal penalties and other ways and means of enforcement.

(H) To assure continued coordination with Federal and Federal-State water-related planning and review processes.

(2) If, with respect to a State program submitted under subsection (g)(1) of this section, the Administrator determines that such State -

(A) has the authority set forth in paragraph (1) of this subsection, the Administrator shall approve the program and so notify (i) such State, and (ii) the Secretary, who upon subsequent notification

from such State that it is administering such program, shall suspend the issuance of permits under subsections (a) and (e) of this section for activities with respect to which a permit may be issued pursuant to such State program; or

(B) does not have the authority set forth in paragraph (1) of this subsection, the Administrator shall so notify such State, which notification shall also describe the revisions or modifications necessary so that such State may resubmit such program for a determination by the Administrator under this subsection.

(3) If the Administrator fails to make a determination with respect to any program submitted by a State under subsection (g)(1) of this section within one-hundred-twenty days after the date of the receipt of such program, such program shall be deemed approved pursuant to paragraph (2)(A) of this subsection and the Administrator shall so notify such State and the Secretary who, upon subsequent notification from such State that it is administering such program, shall suspend the issuance of permits under subsection (a) and (e) of this section for activities with respect to which a permit may be issued by such State.

(4) After the Secretary receives notification from the Administrator under paragraph (2) or (3) of this subsection that a State permit program has been approved, the Secretary shall transfer any applications for permits pending before the Secretary for activities with respect to which a permit may be issued pursuant to such State program to such State for appropriate action.

(5) Upon notification from a State with a permit program approved under this subsection that such State intends to administer and enforce the terms and conditions of a general permit issued by the Secretary under subsection (e) of this section with respect to activities in such State to which such general permit applies, the Secretary shall suspend the administration and enforcement of such general permit with respect to such activities.

(i) Whenever the Administrator determines after public hearing that a State is not administering a program approved under section (h)(2)(A) of this section, in accordance with this section, including, but not limited to, the guidelines established under subsection (b)(1) of this section, the Administrator shall so notify the State, and, if appropriate corrective action is not taken within a reasonable time, not to exceed ninety days after the date of the receipt of such notification, the Administrator shall:

(1) withdraw approval of such program until the Administrator determines such corrective action has been taken, and

(2) notify the Secretary that the Secretary shall resume the programs for the issuance of permits under subsection (a) and (e) of this section for activities with respect to which the State was issuing permits and that such authority of the Secretary shall continue in effect until such time as the Administrator makes the determination described in clause (1) of this subsection and such State again has an approved program.

(j) Each State which is administering a permit program pursuant to this section shall transmit to the Administrator

(1) a copy of each permit application received by such State and provide notice to the Administrator of every action related to the consideration of such permit application, including each permit proposed to be issued by such State, and

(2) a copy of each proposed general permit which such State intends to issue. Not later than the tenth day after the date of the receipt of such permit application or such proposed general permit, the Administrator shall provide copies of such permit application or such proposed general permit to the Secretary and the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service. If the Administrator intends to provide written comments to such State with respect to such permit application or such proposed general permit, he shall so notify such State not later than the thirtieth day after the date of the receipt of such application or such proposed general permit and provide such written comments to such State, after consideration of any comments made in writing with respect to such application or such proposed general permit by the Secretary and the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service, not later than the ninetieth day after the date of such receipt. If such State is so notified by the Administrator, it shall not issue the proposed permit until after the receipt of such comments from the Administrator, or after such ninetieth day, whichever first occurs. Such State shall not issue such proposed permit after such ninetieth day if it has received such written comments in which the Administrator objects

(A) to the issuance of such proposed permit and such proposed permit is one that has been submitted to the Administrator pursuant to subsection (h)(1)(E), or

(B) to the issuance of such proposed permit as being outside the requirements of this section, including, but not limited to, the guidelines developed under subsection (b)(1) of this section unless it modified such proposed permit in accordance with such comments. Whenever the Administrator objects to the issuance of a permit under the preceding sentence such written objection shall contain a statement of the reasons for such objection and the conditions which such permit would include if it were issued by the Administrator. In any case where the Administrator objects to the issuance of a permit, on request of the State, a public hearing shall be held by the Administrator on such objection. If the State does not resubmit such permit revised to meet such objection within 30 days after completion of the hearing or, if no hearing is requested within 90 days after the date of such objection, the Secretary may issue the permit pursuant to subsection (a) or (e) of this section, as the cause may be, for such source in accordance with the guidelines and requirements of this Act.

(k) In accordance with guidelines promulgated pursuant to subsection (i)(2) of section 304 of this Act, the Administrator is authorized to waive the requirements of subsection (j) of this section at the time of the approval of a program pursuant to subsection (h)(2)(A) of this section or any category (including any class, type, or size within such category) of discharge within the State submitting such program.

(l) The Administrator shall promulgate regulations establishing categories of discharges which he determines shall not be subject to the requirements of subsection (j) of this section in any State with a program approved pursuant to subsection (h)(2)(A) of this section. The Administrator may distinguish among classes, types, and sizes within any category of discharges.

(m) Not later than the ninetieth day after the date on which the Secretary notifies the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service that

(1) an application for a permit under subsection (a) of this section has been received by the Secretary, or

(2) the Secretary proposes to issue a general permit under subsection (e) of this section, the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service, shall submit any comments with respect to such application or such proposed general permit in writing to the Secretary.

(n) Nothing in this section shall be construed to limit the authority of the Administrator to take action pursuant to section 309 of this Act.

(o) A copy of each permit application and each permit issued under this section shall be available to the public. Such permit application or portion thereof, shall further be available on request for the purpose of reproduction.

(p) Compliance with a permit issued pursuant to this section, including any activity carried out pursuant to a general permit issued under this section, shall be deemed compliance, for purposes of sections 309 and 505, with sections 301, 307, and 403.

(q) Not later than the one-hundred-eightieth day after the date of enactment of this subsection, the Secretary shall enter into agreements with the Administrator, the Secretaries of the Departments of Agriculture, Commerce, Interior, and Transportation, and the heads of other appropriate Federal agencies to minimize, to the maximum extent practicable, duplication, needless paperwork, and delays in the issuance of permits under this section. Such agreements shall be developed to assure that, to the maximum extent practicable, a decision with respect to an application for a permit under subsection (a) of this section will be made not later than the ninetieth day after the date the notice of such application is published under subsection (a) of this section.

(r) The discharge of dredged or fill material as part of the construction of a Federal project specifically authorized by Congress, whether prior to or on or after the date of enactment of this subsection, is not prohibited by or otherwise subject to regulation under this section, or a State program approved under this section, or section 301(a) or 402 of the Act (except for effluent standards or prohibitions under section 307), if information on the effects of such discharge, including consideration of the guidelines developed under subsection (b)(1) of this section, is included in an environmental impact statement for such project pursuant to the National Environmental Policy Act of 1969 and such environmental impact statement has been submitted to Congress before the actual discharge of dredged or fill material in connection with the construction of such project and prior to either authorization of such project or an appropriation of funds for such construction.

(s)

(1) Whenever on the basis of any information available to him the Secretary finds that any person is in violation of any condition or limitation set forth in a permit issued by the Secretary under this section, the Secretary shall issue an order requiring such persons to comply with such condition or

limitation, or the Secretary shall bring a civil action in accordance with paragraph (3) of this subsection.

(2) A copy of any order issued under this subsection shall be sent immediately by the Secretary to the State in which the violation occurs and other affected States. Any order issued under this subsection shall be by personal service and shall state with reasonable specificity the nature of the violation, specify a time for compliance, not to exceed thirty days, which the Secretary determines is reasonable, taking into account the seriousness of the violation and any good faith efforts to comply with applicable requirements. In any case in which an order under this subsection is issued to a corporation, a copy of such order shall be served on any appropriate corporate officers.

(3) The Secretary is authorized to commence a civil action for appropriate relief, including a permanent or temporary injunction for any violation for which he is authorized to issue a compliance order under paragraph (1) of this subsection. Any action under this paragraph may be brought in the district court of the United States for the district in which the defendant is located or resides or is doing business, and such court shall have jurisdiction to restrain such violation and to require compliance. Notice of the commencement of such action shall be given immediately to the appropriate State.

(4)

(A) Any person who willfully or negligently violates any condition or limitation in a permit issued by the Secretary under this section shall be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or by both. If the conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two years, or by both.

(B) For the purposes of this paragraph, the term "person" shall mean, in addition to the definition contained in section 502(5) of this Act, any responsible corporate officer.

(5) Any person who violates any condition or limitation in a permit issued by the Secretary under this section, and any person who violates any order issued by the Secretary under paragraph (1) of this subsection, shall be subject to a civil penalty not to exceed \$10,000 per day of such violation.

(t) Nothing in this section shall preclude or deny the right of any State or interstate agency to control the discharge of dredged or fill material in any portion of the navigable waters within the jurisdiction of such State, including any activity of any Federal agency, and each such agency shall comply with such State or interstate requirements both substantive and procedural to control the discharge of dredged or fill material to the same extent that any person is subject to such requirements. This section shall not be construed as affecting or impairing the authority of the Secretary to maintain navigation.

National Historic Preservation Act

Authorized by the National Historic Preservation Act of 1966, as amended (NHPA) and administrated by the National Park Service (NPS), the National Register of Historic Places (NRHP) is the official list of the nation's historic places deemed worthy of preservation, and includes districts, sites, buildings, structures, and objects that are significant in American history,

prehistory, architecture, archaeology, engineering, and culture. To be eligible for listing in the NRHP, a property must retain sufficient integrity to convey its significance and meet at least one of the following evaluation criteria:

- A. Is associated with events that have made a significant contribution to the broad patterns of our history; or
- B. Is associated with the lives of significant persons in our past; or
- C. Embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction; or
- D. Has yielded, or may be likely to yield, information important in history or prehistory.

Should a cultural resource be determined eligible for NRHP listing, it is considered a "historic property" under 36 CFR 60.4. Properties listed or formally determined eligible for listing in the NRHP are automatically listed in the California Register of Historical Resources (CRHR)(Public Resources Code [PRC] Section 5024.1(d)(1)).

The NPS publication, *How to Apply the National Register Criteria for Evaluation*, National Register Bulletin 15, establishes how to evaluate the integrity of a historic property and defines integrity as "the ability of a property to convey its significance" (NPS 1997). The evaluation of integrity must be grounded in an understanding of a historic property's physical features and how they relate to the aspects of integrity. Determining which of these aspects are most important to a property requires knowing why and at what level (local, state, or national) it is significant and its period of significance. Although "rarity" of property type is not an aspect of significance, it is considered when assessing integrity.

To retain historic integrity, a property must possess several, and usually most, aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. These seven aspects of integrity are defined as follows:

1. Location is the place where the historic property was constructed or the place where the historic event occurred.
2. Design is the combination of elements that create the form, plan, space, structure, and style of a property.
3. Setting is the physical environment of a historic property and refers to the character of the site and the relationship to surrounding features and open space. Setting often refers to the basic physical conditions under which a property was built and the functions it was intended to serve. These features can be either natural or manmade, including vegetation, paths, fences, and relationships between other features or open space.
4. Materials are the physical elements that were combined or deposited during a particular period or time and in a particular pattern or configuration to form a historic property.
5. Workmanship is the physical evidence of crafts of a particular culture or people during any given period of history or prehistory and can be applied to the property as a whole or to individual components.

6. Feeling is a property's expression of the aesthetic or historic sense of a particular period. It results from the presence of physical features that, when taken together, convey the property's historic character.
7. Association is the direct link between the important historic event or person and a historic property.

Abandoned Shipwreck Act of 1987

The Abandoned Shipwreck Act (ASA) was signed into law on April 28, 1988. The purpose of the ASA is to protect historic shipwrecks in United States from treasure hunters and unauthorized salvagers. The ASA is found in public law at P. L. 100-298, §2, Apr. 28, 1988, 102 Stat. and in the U.S. Code at 43 U.S.C. §§ 2101-2106, et seq.

The ASA establishes Federal government ownership over most abandoned shipwrecks in the nation's rivers and lakes, and in the ocean to a distance of three miles offshore (NPS 2023). Under the Act, the U.S. Government asserted title to three categories of abandoned shipwrecks:

- abandoned shipwrecks embedded in a state's submerged lands;
- abandoned shipwrecks embedded in coralline formations protected by a state on its submerged lands; and
- abandoned shipwrecks located on a state's submerged lands and included in or determined eligible for inclusion in the National Register of Historic Places.

Upon asserting title, the Federal government transferred its title to the government entity that owned the submerged lands containing the shipwrecks. As a result, state governments have title to shipwrecks located on state lands, the Federal government has title to shipwrecks located on Federal lands, and Indian tribes have title to shipwrecks located on Indian lands. The Federal government, however, continues to hold title to sunken U.S. warships and other shipwrecks entitled to Sovereign Immunity, no matter where the vessels are located. Such vessels are not affected by the statute (NPS 2023).

The ASA stipulates that the laws of salvage and finds do not apply to abandoned shipwrecks claimed by the government under the Act. It removes those shipwrecks from the jurisdiction of Federal Admiralty Court, such that the wrecks, their cargo, and content are no longer treated as commodities lost at sea and in need of salvage. For archaeology, it means that shipwrecks are treated as historically and scientifically valuable (NPS 2023).

Native American Graves Protection and Repatriation Act (NAGPRA)

NAGPRA requires Federal agencies and institutions that receive Federal funds (including museums, universities, state agencies, and local governments) to repatriate or transfer Native American human remains and other cultural items to the appropriate parties by:

- Consulting with lineal descendants, Indian Tribes, and Native Hawaiian organizations on Native American human remains and other cultural items;
- Protecting and planning for Native American human remains and other cultural items that may be removed from Federal or tribal lands;
- Identifying and reporting all Native American human remains and other cultural items in inventories and summaries of holdings or collections; and
- Giving notice prior to repatriating or transferring human remains and other cultural items.

The Act recognizes the rights of lineal descendants, Indian Tribes, and Native Hawaiian organizations (NHOs) in Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony. The Secretary of the Interior is responsible for promulgating regulations to carry out the provisions of the Act and delegated this authority to the Assistant Secretary. Since 1993, the Department of the Interior (Department) has published rules under the title “Native American Graves Protection and Repatriation Act Regulations” including:

- RIN 1024-AC07, 1993 Proposed Rule (58 FR 31122, May 28, 1993) and 1995 Final Rule (60 FR 62134, December 4, 1995);
- RIN 1024-AC84, Civil Penalties Final Rule (68 FR 16354, April 3, 2003) and Future Applicability Final Rule (72 FR 13184, March 21, 2007);
- RIN 1024-AD68, 2007 Proposed Rule Disposition of Culturally Unidentifiable Human Remains (72 FR 58582, October 16, 2007) and 2010 Final Rule Disposition of Culturally Unidentifiable Human Remains (75 FR 12378, March 15, 2010); and
- RIN 1024-AE00, Disposition of Unclaimed Cultural Items Final Rule (80 FR 68465, November 5, 2015).
- RIN 1024-AE19, to clarify and improve upon the systematic processes for disposition or repatriation of Native American human remains and cultural items (87 FR 63202, hereafter 2022 Proposed Rule).

This final rule revises and replaces definitions and procedures for lineal descendants, Indian Tribes, Native Hawaiian organizations, museums, and Federal agencies to implement the Native American Graves Protection and Repatriation Act of 1990. These regulations clarify and improve upon the systematic processes for the disposition or repatriation of Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony. These regulations provide a step-by-step roadmap with specific timelines for museums and Federal agencies to facilitate disposition or repatriation. Throughout these systematic processes, museums and Federal agencies must defer to the Native American traditional knowledge of lineal descendants, Indian Tribes, and Native Hawaiian organizations. This rule is effective January 12, 2024. State

California Public Resources Code 5097.9

§ 5097.9 – Interference with Native American religion or damage to cemeteries or places of worship, etc., prohibited, construction and exemptions from law.

No public agency, and no private party using or occupying public property, or operating on public property, under a public license, permit, grant, lease, or contract made on or after July 1, 1977, shall in any manner whatsoever interfere with the free expression or exercise of Native American religion as provided in the United States Constitution and the California Constitution; nor shall any such agency or party cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, except on a clear and convincing showing that the public interest and necessity so require.

§ 5097.91 – Native American Heritage Commission

There is in state government a Native American Heritage Commission (NAHC), consisting of nine members appointed by the Governor with the advice and consent of the Senate.

§ 5097.94 – Powers and duties

This section discusses the powers and duties of the NAHC. These powers and duties include:

- To Identify and catalog places of special religious or social significance to Native Americans and known graves and cemeteries of Native American on private lands, notifying landowners whose property contains Native American graves and cemeteries and identifying the most likely descendant.
- To make recommendations relative to Native American sacred places that are located on private lands, are inaccessible to Native Americans, and have cultural significance to Native Americans for acquisition by the state or other public agencies for the purpose of facilitating or assuring access thereto by Native Americans.
- To make recommendations to the Legislature relative to procedures which will voluntarily encourage private property owners to preserve and protect sacred places in a natural state and to allow appropriate access to Native American religionists for ceremonial or spiritual activities.
- To make recommendations to the Director of Parks and Recreation and the California Arts Council relative to the California State Indian Museum and other Indian matters touched upon by department programs.
- To assist Native Americans in obtaining appropriate access to sacred places that are located on public lands for ceremonial or spiritual activities.
- To assist state agencies in any negotiations with agencies of the federal government for the protection of Native American sacred places that are located on federal lands.

§ 5097.98 – Notification of discovery of Native American human remains, descendants; disposition of human remains and associated grave goods.

This section discusses the procedures that need to be followed upon the discovery of Native American human remains. The NAHC, upon notification of the discovery of human remains, is required to contact the County Coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code and shall immediately notify those persons it believes to be most likely descended from the deceased Native American.

Upon the discovery of the Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this section, with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.

The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment. The descendants' preferences for treatment may include the following:

- A. The nondestructive removal and analysis of human remains and items associated with Native American human remains.
- B. Preservation of Native American human remains and associated items in place.
- C. Relinquishment of Native American human remains and associated items to the descendants for treatment.

D. Other culturally appropriate treatment.

The parties may also mutually agree to extend discussions, taking into account the possibility that additional or multiple Native American human remains, as defined in this section, are located in the Proposed API/APE, providing a basis for additional treatment measures.

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 48 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.

Human remains of a Native American may be an inhumation or cremation and in any state of decomposition or skeletal completeness. Any items associated with human remains that are placed or buried with Native American human remains are to be treated in the same manner as the remains but do not by themselves constitute human remains.

Whenever the commission is unable to identify a descendant, or the descendants identified fail to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendants, and the mediation provided for in subdivision (k) of section 5097.94. if invoked, fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall inter the human remains and items associated with Native American human remains with appropriate dignity on the property in a location not subject to further and future subsurface disturbance. To protect these sites, that landowner shall do one or more of the following:

- A. Record the site with the commission or the appropriate Information Center.
- B. Utilize an open-space or conservation zoning designation or easement.
- C. Record a document with the county in which the property is located.

Upon the discovery of multiple Native American human remains during a ground-disturbing land development activity, the landowner may agree that additional conferral with descendants is necessary to consider culturally appropriate treatment of multiple Native American human remains.

§ 5097.99. Obtaining or possessing Native American artifacts or human remains taken from grave or cairn on or after January 1, 1984; prohibition

This section discusses the prohibitions and felony charges for obtaining or possessing Native American artifacts or human remain from a grave or cairn.

§ 5097.991 Policy of the State that Native American Remains and Associated Grave Artifacts Shall be Repatriated

It is the policy of the state that Native American remains and associated grave artifacts shall be repatriated.

California Environmental Quality Act

The Proposed Project is subject to compliance with CEQA statutes and guidelines, which require both public and private projects with financing or approval from a public agency to assess the undertaking's impact on cultural resources (PRC Section 21082, 21083.2 and 21084 and California Code of Regulations 10564.5). Specifically, under PRC Section 201084.1, a "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." The first step in the CEQA compliance process in terms of historical resources is to identify any that may be affected by the project.

Cultural resources are buildings, sites, human-modified landscaped areas, traditional cultural properties, structures, or objects that may have historical, architectural, cultural, or scientific importance based on established criteria. CEQA states that if a project will have a significant impact on important cultural resources, deemed "historically significant," then project alternatives and mitigation measures must be considered.

"Historical resource" is a term with a defined statutory meaning (PRC Section 21084.1). The determination of significant impacts on historical and archaeological resources is described in Sections 15064.5(a) and 15064.5(b) of the CEQA Guidelines. Section 15064.5(a) states that historical resources include the following:

- A resource listed or determined to be eligible by the State Historical Resources Commission for listing, in the CRHR (PRC Section 5024.1).
- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the PRC, or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the PRC, will be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- Any object, building, structure, site, area, place, record, or manuscript that 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 may be considered a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource will be considered by the lead agency to be historically significant if the resource meets the criteria for listing in the [CRHR] (PRC Section 5024.1).
- The fact that a resource is not listed in or determined to be eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to PRC Section 5020.1[k]) or identified in a historical resources survey (meeting the criteria in PRC Section 5024.1[g]) does not preclude a lead agency from determining that the resource may be an historical resource as defined in PRC Section 5020.1(j) or 5024.1.

California Register of Historical Resources

The CRHR program encourages public recognition and protection of resources of architectural, historical, archaeological, and cultural significance; identifies historical resources for state and local planning purposes; determines eligibility for state historic preservation grant funding; and affords certain protections under CEQA. The criteria established for eligibility for the CRHR are directly comparable to the national criteria established for the NRHP.

To be eligible for listing in the CRHR, a property must meet at least one of the following four criteria:

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

For a property to qualify under the CRHR's Criteria for Evaluation, it must also retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reasons for its significance. For the purposes of eligibility for the CRHR, integrity is defined as, "the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance" (California Office of Historic Preservation 2001). To determine if a property retains the physical characteristics corresponding to its historic context, the NRHP has identified seven aspects of integrity, which the CRHR closely follows.

1. Location is the place where the historic property was constructed or the place where the historic event occurred.
2. Design is the combination of elements that create the form, plan, space, structure, and style of a property.
3. Setting is the physical environment of a historic property.
4. Materials are the physical elements that were combined or deposited during a particular period and in a particular pattern or configuration to form a historic property.
5. Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.
6. Feeling is the property's expression of the aesthetic or historic sense of a particular period.
7. Association is the direct link between an important historic event or person and a historic property.

Because integrity is based on a property's significance in a specific historic context, evaluations of integrity can only be completed after historic significance has been established.

Assembly Bill 52 (AB 52)

Signed into law in September 2014, AB 52 created a new class of resources—tribal cultural resources—for consideration under CEQA. Tribal cultural resources may include sites, features, places, cultural landscapes, sacred places, or objects with cultural value to a California Native American tribe that are listed or determined to be eligible for listing in the California Register of Historic Resources (CRHR), included in a local register of historical resources, or a resource determined by the lead CEQA agency, in its discretion and supported by substantial evidence, to be significant and eligible for listing on the CRHR. AB 52 requires that the lead CEQA agency consult

with California Native American tribes that have requested consultation for projects that may affect tribal cultural resources. The lead CEQA agency shall begin consultation with participating Native American tribes prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report. Under AB 52, a project that has potential to cause a substantial adverse change to a tribal cultural resource constitutes a significant effect on the environment unless mitigation reduces such effects to a less than significant level.

Local

Solano County

The Solano County General Plan (Solano County 2008) offers goals, policies, and implementation programs to guide the preservation of precontact and historic archaeological sites in Solano County. The county's stated cultural resource goals include (1) collaboration with Native American groups to protect traditional cultural places and sacred spaces in the context of land use decisions and (2) leveraging the county's historic capital to drive economic development, especially tourism.

The policies related to cultural resources outlined by the Solano County General Plan include the following:

RS.P-38. Identify and preserve important prehistoric and historic structures, features, and communities.

RS.P-39. Tie historic preservation efforts to the County's economic development pursuits, particularly those relating to tourism.

RS.P-40. Consult with Native American governments to identify and consider Native American cultural places in land use planning.

In pursuit of its cultural resource goals, Solano County designed an implementation program and possible mitigation measures in areas with medium to high potential for archaeological or cultural resources:

- RS.I-25. Require cultural resources inventories of all new development projects in areas identified with medium or high potential for archeological or cultural resources. Where a preliminary site survey finds medium to high potential for substantial archaeological remains, the County shall require a mitigation plan to protect the resource before issuance of permits. Mitigation may include:
- Having a qualified archaeologist present during initial grading or trenching (monitoring);
 - Redesign of the project to avoid archaeological resources (this is considered the strongest tool for preserving archaeological resources);
 - Capping the site with a layer of fill; and/or
 - Excavation and removal of the archaeological resources and curation in an appropriate facility under the direction of a qualified archaeologist.
 - Alert applicants for permits within early settlement areas to the potential sensitivity. If significant archaeological resources are discovered during construction or grading activities, such activities shall cease in the immediate area of the find until a qualified archaeologist can determine the significance of the resource and recommend alternative mitigation.

Contra Costa County

The Contra Costa County General Plan (Contra Costa County 2010) details policies and implementation measures related to the stated goal of the identification and preservation of historic and cultural resources in Contra Costa County.

Contra Costa County's historic and cultural resource policies include:

- 9-28. Areas which have identifiable and important archaeological or historic significance shall be preserved for such uses, preferably in public ownership.
- 9-29. Buildings or structures that have visual merit and historic value shall be protected.
- 9-30. Development surrounding areas of historic significance shall have compatible and high-quality design in order to protect and enhance the historic quality of the area.
- 9-31. Within the Southeast County area, applicants for subdivision or land use permits to allow non-residential uses shall provide information to the County on the nature and extent of the archeological resources that exist in the area. The County Planning Agency shall be responsible for determining the balance between multiple use of the land and protection of resources (Contra Costa General Plan).

Contra Costa County's historic and cultural resource implantation measures include those related to the development review process, ordinance revisions, and other programs:

Development Review Process

- 9-i. Develop an archaeological sensitivity map to be used by staff in the environmental review process for discretionary permits to determine potential impacts upon cultural resources.
- 9-j. As a condition of approval of discretionary permits, include a procedure to be followed in the event that archaeological resources are encountered during development or construction.

Ordinance Revisions

- 9-k. Review existing County ordinances and guidelines and make amendments as necessary to ensure that they provide adequate safeguards for archaeological and historic resources.
- 9-l. Develop design guidelines for areas adjacent to or within scenic corridors or historic sites.

Other Programs

- 9-m. Promote the use of the State of California Historic Building Code to protect historic sites in the county.
- 9-n. Encourage owners of eligible historic properties to apply for State and federal registration of these sites and to participate in tax incentive programs for historic restoration.
- 9-o. Seek coordination and cooperation with federal, State, and local governments, and with private and non-profit organizations, to establish funding sources to preserve, restore,

and enhance unique historic sites. Such funding sources may be used to acquire and preserve sites or to acquire easements over sites and building facades.

- 9-p. Identify funding mechanisms, including funding from the County to the extent possible, to support programs to preserve, restore, and enhance unique historic sites.

Sacramento County

The Sacramento County General Plan (Sacramento County 2017) provides an overarching goal related to the protection and preservation of cultural resources:

Promote the inventory, protection and interpretation of the cultural heritage of Sacramento County, including historical and archaeological settings, sites, buildings, features, artifacts and/or areas of ethnic historical, religious or socioeconomical importance.

In pursuance of that goal, the Sacramento County General Plan identifies six objectives, policies, and implementation programs to accomplish those objectives.

Objective 1: Comprehensive knowledge of archeological and historic site locations.

Implementation Measures:

- A. In cooperation with the North Central Information Center (NCIC) and cultural resources professionals, conduct:
- A comprehensive survey to record location of prehistoric, ethnohistoric and historic sites.
 - A comprehensive survey to identify historically and architecturally important structures.

Objective 2: Attention and care during project review and construction to ensure that cultural resource sites, either previously known or discovered on the project site, are properly protected with sensitivity to Native American values.

Policies:

- CO-150. Utilize local, state and national resources, such as the NCIC, to assist in determining the need for a cultural resources survey during project review.
- CO-151. Projects involving an adoption or amendment of a General Plan or Specific Plan or the designation of open space shall be noticed to all appropriate Native American tribes in order to aid in the protection of traditional tribal cultural places.
- CO-152. Consultations with Native American tribes shall be handled with confidentiality and respect regarding sensitive cultural resources on traditional tribal lands.
- CO-153. Refer projects with identified archeological and cultural resources to the Cultural Resources Committee to determine significance of resource and recommend appropriate means of protection and mitigation. The Committee shall coordinate with the Native American Heritage Commission in developing recommendations.
- CO-154. Protection of significant prehistoric, ethnohistoric and historic sites within open space easements to ensure that these resources are preserved in situ for perpetuity.
- CO-155. Native American burial sites encountered during preapproved survey or during construction shall, whenever possible, remain in situ. Excavation and reburial shall

occur when in situ preservation is not possible or when the archeological significance of the site merits excavation and recording procedure. On-site reinterment shall have priority. The project developer shall provide the burden of proof that off-site reinterment is the only feasible alternative. Reinterment shall be the responsibility of local tribal representatives.

- CO-156. The cost of all excavation conducted prior to completion of the project shall be the responsibility of the project developer.
- CO-157. Monitor projects during construction to ensure crews follow proper reporting, safeguards, and procedures.
- CO-158. As a condition of approval of discretionary permits, a procedure shall be included to cover the potential discovery of archaeological resources during development or construction.

Implementation Measures:

- A. Develop a Cultural Resources Committee (appointed by the Board of Supervisors) to establish procedures and criteria for preservation and mitigation for cultural resources by utilizing information available from the Sacramento Archives and Museum Collection Center (SAMCC) and the North Central Information Center (NCIC).
- B. At the beginning of projects involving an adoption or amendment of a General Plan or Specific Plan or the designation of open space, notify the California Native American Heritage Commission and the appropriate Native American tribes regarding the project and, if requested by the tribes, set up consultation regarding the protection of traditional tribal cultural places. This notification and consultation process shall be carried out in accordance with Government Code Sections 65040.2, 65092, 65351, 65352, 65352.3, 65352.4, 65560, 65562.5; Public Resources Code Sections 5097.9, 5097.993; and Civil Code Section 815.3 and shall prevent public exposure of sensitive cultural resources.
- C. Establish procedures to:
 - o Conduct periodic training programs for County Public Works and Infrastructure Agency and County Airports construction and maintenance personnel to facilitate their awareness of archeological site indicators and proper procedures.
 - o Utilize mitigation monitoring and reporting programs to provide for on-site monitoring during construction adjacent to known sites.
 - o Write letters during the environmental review process, to peoples of Native American descent based on a contact list provided by the Native American Heritage Commission, to request a Native American statement regarding a proposed project when that project is located on a site with known cultural resources.
- D. Pursue becoming a certified local government and establish a local County registry to document and protect cultural resources that are significant to the County of Sacramento. This registry should be administered through the Cultural Resources Committee (please refer to Implementation Measure A under Archeological Site Protection During Development).

Objective 3: Structures with architectural or historical importance preserved to maintain contributing design elements.

Policies:

- CO-164. Structures having historical and architectural importance shall be preserved and protected.
- CO-165. Refer projects involving structures or within districts having historical or architectural importance to the Cultural Resources Committee to recommend appropriate means of protection and mitigation.
- CO-166. Development surrounding areas of historic significance shall have compatible design in order to protect and enhance the historic quality of the areas.
- CO-167. When conducting planning studies, County Planning and Environmental Review staff, shall encourage the adaptive reuse of historic resources when the original use is no longer feasible or allowed under proposed area planning efforts.
- CO-168. County-owned historic and cultural resources shall be preserved and maintained, such that modifications, alterations, and rehabilitations are conducted in a manner that is consistent with the U.S. Secretary of the Interiors Standards for the Treatment of Historic Properties.

Implementation Measures:

- A. In cooperation with the North Central Information Center (NCIC) and cultural resources professionals, conduct:
 - o A comprehensive survey to record location of prehistoric, ethnohistoric and historic sites.
 - o A comprehensive survey to identify historically and architecturally important structures.

Objective 4: Known cultural resources protected from vandalism unauthorized excavation, or accidental destruction.

Policies:

- CO-169. Restrict the circulation of cultural resource location information to prevent potential site vandalism. This information is exempt from the "Freedom of Information Act".
- CO-170. Cooperate with other agencies to enforce laws and aggressively prosecute illegal collection of artifacts.
- CO-171. Design and implement interpretive programs about known archeological or historical sites on public lands or in public facilities. Interpretation near or upon known sites should be undertaken only when adequate security is available to protect the site and its resources.

Implementation Measures:

- A. Develop a plan in conjunction with Archeological Conservancy to secure easements, agreements, or other appropriate mechanisms to protect known cultural sites from disturbance or erosion.
- B. Periodic patrol of County owned and managed archeological sites by park rangers.

- C. Implement a program within County departments which manage or patrol properties with known cultural resources to facilitate their awareness of archaeological site indicators and proper procedures in handling cultural resources.

Objective 5: Properly stored and classified artifacts for ongoing study.

Implementation Measures:

- A. Initiate discussions regarding the preparation of a comprehensive regional study design for the excavation, cataloging and analysis of cultural resource artifacts and the synthesis of available information.
- B. Identify a repository for cataloging and storage of excavated cultural artifacts.

Objective 6: Public awareness and appreciation of both visible and intangible historic and cultural resources.

Policies:

- CO-172. Provide historic and cultural interpretive displays, trails, programs, living history presentations, and public access to the preserved artifacts recovered from excavations.
- CO-173. Interpretive elements involving Native American cultural resources shall be located at village sites (provided any unexcavated resources are properly protected) representative of different physical environments found in the County.
- CO-174. Promote and support the California Indian Heritage Center.
- CO-175. The County shall support efforts to develop Cultural Resources Tourism program within the County as a tool to preserve important cultural resources and in order to encourage economic development of resources within the County.

Implementation Measures:

- A. In cooperation with local cultural resources experts:
 - o Present educational programs to school age children.
 - o Design educational criteria guidelines and study units for incorporation in county school curricula.

Setting

Environmental Setting

The Project is at the confluence of the Sacramento and San Joaquin rivers at the eastern end of Suisun Bay and the western edge of the Sacramento–San Joaquin River Delta. It extends northward into the low-lying Montezuma Hills, and its southern point in Pittsburg is approximately 3 miles north of the California Coast Range foothills in Contra Costa County. The deep water and lack of tributaries within the Proposed API/APE is somewhat unusual given its location at the distal edge of a major river delta. While most deltas expand outward in broad fans, the Sacramento–San Joaquin River Delta is an inverted delta that contracts with proximity to its outlet in the San Francisco Bay. The unique setting of the Proposed API/APE is a result of the region’s geologic history.

Before the San Francisco Bay began to form at the start of the Holocene 12,000 years ago, the coastline was approximately 30 miles west of its current position near the Farallon Islands due to lower sea levels during the Pleistocene. The Sacramento and San Joaquin rivers faced a steeper gradient and cut deep and narrow channels through the Proposed API/APE as water flowed steadily toward the Pacific Ocean. Gravels found in Pleistocene deposits of the Montezuma Hills at the northern end of the Proposed API/APE and Pleistocene alluvial fans at the southern edge of the Proposed API/APE suggest a high-energy depositional environment during the Pleistocene (Atwater 1982; Helley and Graymer 1998). To the west and downstream of the Proposed API/APE, the California River and other smaller streams and rivers drained through the Franciscan Valley west through the mouth of the Golden Gate channel toward the Farallon Islands, where the water drained into what was then the shoreline of the Pacific Ocean (Meyer and Rosenthal 2007). The lower sea levels 22,000 to 15,000 years before present [BP] provide the potential for submerged prehistoric sites within the Proposed API/APE as prehistoric peoples would have lived on these landforms. Presently, any prehistoric sites would be inundated as the lowest portions of the Franciscan Valley floor and most of the continental shelf flooded between 15,000 and 11,000 years BP.

Once the sea level started to rise in the Holocene and the San Francisco Bay flooded, the river's gradient and energy decreased, causing it to dump its sediment load away from the ocean in what is now the Sacramento-San Joaquin River Delta. This clay-rich material is evident in the muddy marsh deposits along the bank of the Sacramento River within the Proposed API/APE (Helley and Graymer 1998). Freshwater marshes began to form along the margins of the bay and river around the newly deposited sediments that began to accumulate and enabled human occupation of these areas circa 11,000 B.C. The Suisun Bay and Delta, including the Proposed API/APE, may have been exposed. However, sediment deposition and continued tidal flow have likely hid or destroyed evidence of this occupation. Underscoring this point, the Proposed API/APE is located in an area of a braided stream with channels that have constantly shifted and truncated any of the previously intact paleo-landforms. Alternating sequences of fine- to coarse-grained sediments represent cycles of marine transgression and regression throughout the Pleistocene. The most recent cycles of Pleistocene marine transgression and regression are evident in the erosion, burial, or uplift of ancient low depositional energy environments (Atwater 1982). Subsequently, the submerged portions of the Proposed API/APE are not conducive for in situ archaeological deposits to be present.

Attachment G. Geoarchaeology and Buried Site Assessment Report contains a detailed geoarchaeological and buried site sensitivity analysis of the Proposed API/APE.

Climate

The Proposed Project area has a Mediterranean climate that consists of mild to moderately cold, wet winters and hot, dry summers. High winds blow through the hill country within this area and are strongest during the winter. Approximately 90 percent of the annual precipitation occurs from November through April and averages 23 inches per year (Best Places 2024). This relative aridity has influenced the history of land use and occupation of the southern Solano County. Pasture grasses are scarce, and forage is meager during the summer and fall. Dry farming could be practiced in certain areas, but large-scale irrigation farming was only economically viable along the Sacramento River (Solano County 2024).

Geology

This section is reproduced from the paleontological report prepared for this Proposed Project (Clifford 2024). The Proposed Project area is near the border of the Great Valley geomorphic province and the Coast Ranges geomorphic province. A geomorphic province is a region of unique topography and geology distinguished from other regions based on its landforms and tectonic history.

The Coast Ranges include north-northwest trending mountain ranges and valleys formed due to uplift along the active Pacific Plate–North American plate boundary system. The basement rocks in the Coast Ranges consist of the Franciscan Complex and the Salinian Block plutonic igneous basement rocks. The metamorphic and marine rocks of the Franciscan Complex were primarily derived from erosion of a volcanic arc, subsequent deposition in a deep marine environment, and later accretion onto the continental margin of North America during the subduction of the Farallon Plate (Schemmann et al. 2008). Later, the topography and geology of the region were highly influenced by the development of the San Andreas Fault Zone on the Pacific plate–North American plate boundary beginning at least 30 million years ago [Ma] (Dickinson 1981).

The Great Valley is a 50-mile-wide by 400-mile-long alluvial plain in the central part of California that has accumulated sediment since the Jurassic Period (201–145 Ma) (California Geological Survey [CGS] 2002). The Great Valley is influenced by two rivers with the northern portion of the valley, the Sacramento Valley, being drained by the Sacramento River and the southern portion of the valley, the San Joaquin Valley, drained by the San Joaquin River (CGS, 2002). The depth of the sedimentary deposits, combined with associated regional tectonic forces, have produced extensive oil fields particularly in the southernmost San Joaquin Valley and along anticlinal uplifts on its southwestern margin (CGS 2002).

Locally, the Proposed Project area crosses the Suisun Bay, an estuarine embayment at the intersection of the San Francisco Bay and Sacramento River Delta. Estuaries often act as sediment “traps” (McLusky 1981), in this case resulting in accumulation of sediment in and near the river during the Pleistocene Epoch (2.58 Ma to 11,700 years ago) and Holocene Epoch (11,700 years ago to present). The northern portion of the Proposed Project area near the proposed Collinsville Substation is in the southern edge of the Montezuma Hills, which is the surficial result of a local deep, asymmetric, south-plunging graben of underlying sediment from the Paleogene Period (66–23 Ma) (Krug et al. 1992).

Soils

This section is reproduced with some revision from the paleontological report prepared for this Proposed Project (Clifford 2024). The geology of the Proposed Project area is mapped by Graymer et al. (2002) at a scale of 1:100,000 (Figure 3-1, Figure 3-2, and Figure 3-3). The Proposed Project area is underlain by the following geologic units: Montezuma Formation (Qmz), alluvial fan deposits (Qpf), delta mud deposits (Qhdm), bay mud deposits (Qhbm), alluvial fan deposits (Qhf), artificial fill (af), and unmapped sedimentary deposits of the Suisun Bay and the Sacramento River Delta.

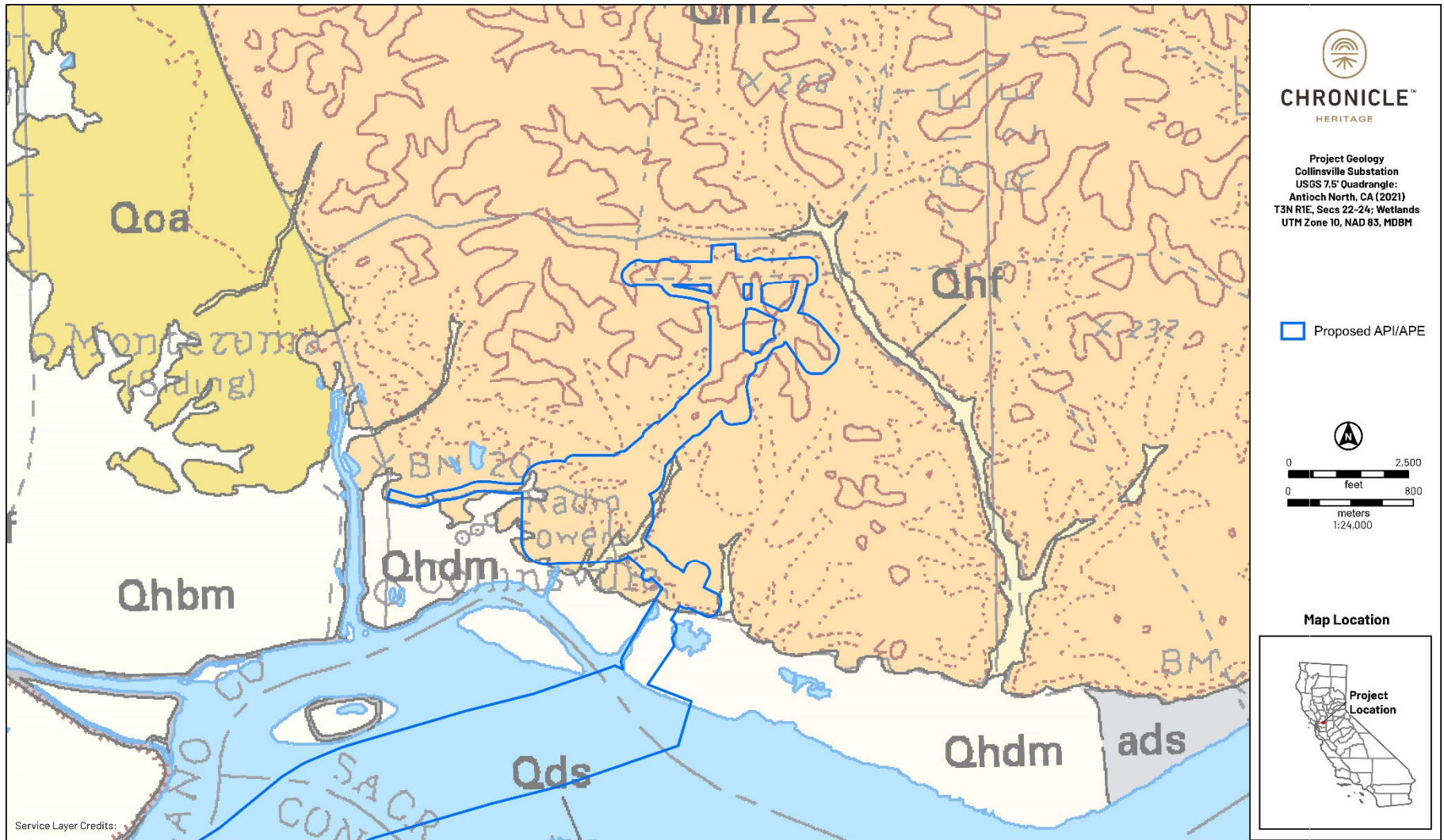


Figure 3-1. Geology of the Proposed Project Area (Graymer et al. 2002), map 1



Figure 3-2. Geology of the Proposed Project Area (Graymer et al. 2002), map 2

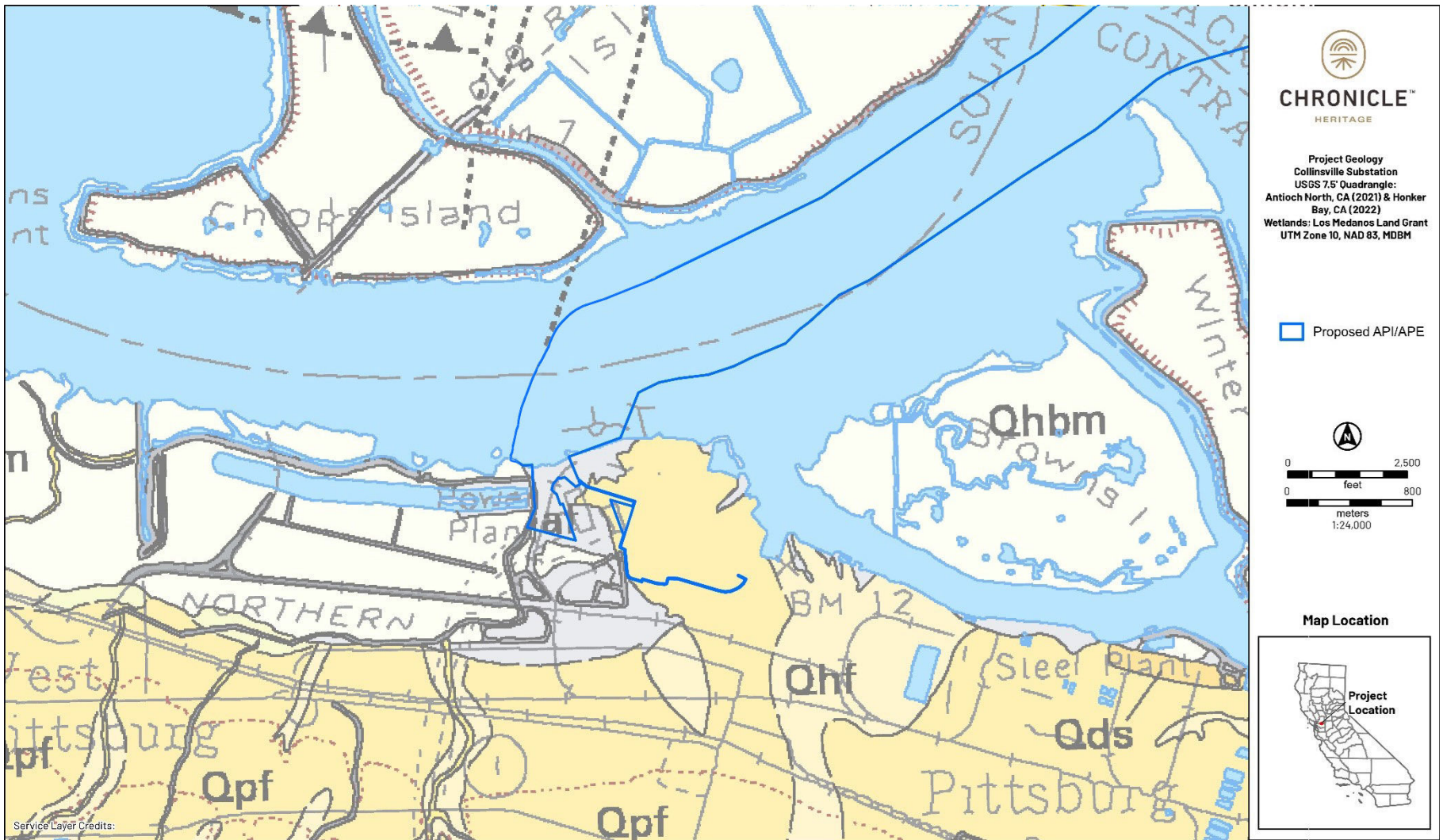


Figure 3-3. Geology of the Proposed Project Area (Graymer et al. 2002), map 3

The Montezuma Formation (Qmz) and alluvial fan deposits (Qpf) are too old to have any potential for human-generated remains. The other soils are Holocene and, therefore, young enough to potentially contain archaeological deposits.

- Delta mud deposits (Qhdm) are composed of mud and peat with minor silt and sand deposited at or near sea level (Graymer et al. 2002). This unit underlies the lower-elevation, near-shore areas in the northern portion of the Proposed Project area. These areas may have been too wet to support human activity of any extent and probably have low sensitivity for archaeological deposits.
- Bay mud deposits (Qhbm) from the Holocene are composed of gray, green, blue, and black clay and silty clay underlying marshlands and tidal mud flats with lenses of well-sorted, fine sand and silt, shell, and peat (Graymer et al. 2002). This unit is mapped in the western edge of the northern portion of the Proposed Project area and the southwest corner of the southern portion of the Proposed Project area and may underlie more of the southern portion below the artificial fill (af, discussed below). Like the previous sediments, these were likely too wet when they were deposited for any extensive human activity.
- Alluvial fan deposits (Qhf) from the Holocene Epoch are composed of moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains (Graymer et al., 2002). This unit may underlie the southern portion of the Proposed Project area below the artificial fill (af, discussed below). These soils likely have moderate sensitivity for archaeological deposits and especially those close to water sources. Archaeological deposits would likely lie on old land surfaces (paleosols) if they are present.
- Artificial fill (af) is composed of undifferentiated, man-made deposit of various materials and ages including dredge spoils, levee fill, road embankments, earthen dams, and railroad grades (Graymer et al. 2002). This unit underlies PG&E's existing Pittsburg Substation in the southern portion of the Proposed Project area. Because of its man-made origin and recent age, artificial fill has very low archaeological sensitivity.
- The geologic units in the Proposed Project area underlying Suisun Bay and the Sacramento River Delta are not mapped by Graymer et al. (2002). Previous sampling of submarine bay and delta sediment showed that clay, silt, and coarse sand of intertidal to subtidal environments were deposited on thick estuarine mud from the middle Holocene (Chin et al. 2002; Luoma et al. 1984). These sediments are similar to the bay mud deposits (Qhbm) and delta mud deposits (Qhdm), though there is likely also significant contamination in the surficial sediment by debris from the nineteenth and twentieth century, including from mining and agriculture (Capiella et al. 1999). Therefore, they have low sensitivity for archaeological deposits.

Vegetation and Associated Wildlife

The Proposed Project area is partially within the low-elevation Suisun Terraces and Low Hills ecoregion that occurs on mostly Quaternary alluvium, surrounding Suisun Bay, upland from the lower part of the Delta. A few low hills occur, such as the Portrero Hills and Montezuma Hills. This region is mostly an urban or urbanizing region and includes the cities of Fairfield, Concord, Pittsburg, and Antioch. The Montezuma Hills are mostly non-native grasslands used for grazing and wind farms (USEPA 2016).

The Proposed Project is also within the Delta ecoregion which is a low elevation area, near sea level, at the confluence of major rivers. It is characterized by numerous sloughs and channels formed where the Sacramento, San Joaquin, Cosumnes, Mokelumne, and Calaveras rivers enter the ecoregion. Water from these rivers commingles in the Delta and is influenced by tidal action, streamflow, and water diversion as it flows toward San Francisco Bay. Brackish tidal water enters the area when river flow is low during the summer and autumn. In the main part of the ecoregion, former wetland islands have been reclaimed for intensive agriculture with a network of levees. Corn, alfalfa, hay, and wheat are the most extensive crops on these organic soils, although various crops were grown historically. Soil temperature regimes are thermic and soil moisture regimes are mostly aquic, with some xeric on levees. Land subsidence and salinity intrusion are two of many important resource issues here. The western part of the ecoregion includes large areas of brackish and seasonal freshwater marshes and wetlands that surround Grizzly Bay and Suisun Bay. The native vegetation historically consisted of aquatic plants such as tules, cattails, and rushes. Saltgrass was dominant in many areas. Many of the diked wetlands are managed for waterfowl hunting. The Delta plays a central role in the distribution of water from the state's wetter, northern regions to its southern, arid, and populous cities and agricultural areas. These water diversions can have adverse effects on species such as delta smelt, Chinook salmon, Central Valley steelhead, and green sturgeon (USEPA 2016).

Precontact Setting

The most recently updated prehistory of the San Francisco Bay Area is presented by Milliken et al. (2007). Also applicable to the Proposed Project vicinity is evidence gathered from recent archaeological investigations conducted in the Upper Los Vaqueros Watershed which is approximately 15 miles south of the Proposed Project. These studies have revealed nearly 10,000 years of occupation which is one of the longest sequences of human presence documented in a single locality in the broader San Francisco Bay Area (Meyer and Rosenthal 1997; Price et al. 2008). The prehistory presented in Meyer and Rosenthal (1997) is summarized below to provide context to evaluate cultural resources and develop potential research questions to guide recommendations for mitigation. Milliken et al. (2007) provides an updated prehistory of the broader San Francisco Bay Area.

Meyer and Rosenthal (1997) organized the prehistory of the Los Vaqueros region into five periods:

- Lower Archaic period 10,000 to 6,000 B.P. (8050 to 4050 B.C.)⁴
- Middle Archaic period 6,000 to 2,500 B.P. (4050 to 50 B.C.)
- Upper Archaic period 2,500 to 1,500 B.P. (50 B.C. to A.D. 450)
- Upper Archaic/Emergent period transition 1,500 to 700 B.P. (A.D. 450 to 1250)
- Emergent period 1,000 to 200 B.P. (A.D. 1250 to ca. 1750)

Two different chrono-cultural frameworks are commonly used to organize the archaeological record in the San Francisco Bay Area. One system comprises the Early-Middle-Late period divisions established by Beardsley (1954), commonly referred to as the Central California Taxonomic System (CCTS)(Gerow with Force 1968). The other system is based on the Archaic-Emergent period chronology established by Fredrickson (1973, 1994). The CCTS system divisions are primarily based on changes in material culture, including stylistic changes in artifacts such as

⁴ When dates are presented in B.P., the corresponding B.C./A.D. dates are provided in parentheses as a conceptual aid.

shell beads, and the presence or absence of various artifact types or classes. Some temporal subdivisions have been refined to 200-300-year intervals on the basis of shell bead horizons that have recently been recalibrated using the radiocarbon dating technique (e.g. Groza 2002). The Archaic-Emergent period chronology represents changes in subsistence and settlement patterns, economic strategies, and stylistic elements of the material culture. Choice of chrono-cultural framework depends upon the research questions and the nature of the archaeological record being studied. It is interesting to note that Milliken et al. (2007) used a hybrid system for their recent reevaluation of the prehistory of the San Francisco Bay Area, applying a combination of the temporal sequence of the CCTS and the cultural sequence of the Archaic-Emergent framework.

As Meyer and Rosenthal (1997) discussed, the archaeological record of the Los Vaqueros watershed area was not well known when the CCTS was developed, with the earliest period beginning after people had been living in the Los Vaqueros area for thousands of years. A general scarcity of temporally diagnostic artifact types, such as shell beads, from this area made the temporal divisions of the CCTS, which were based largely on changes in temporally diagnostic artifact types and not effective for linking discrete deposits from the Los Vaqueros area to time-specific subperiods of the CCTS (Price et al. 2008). For these reasons, Meyer and Rosenthal framed their analysis with the Archaic-Emergent scheme, which allows for greater time depth. This framework also places the interpretive focus on behavioral changes such as shifts in economic strategies and mobility patterns, though these are identified in part by temporally diagnostic artifacts such as millingslabs or mortars. Nonetheless, with the accumulation of evidence in the 1990s from the archaeological excavations undertaken as part of the mitigation for the Los Vaqueros Reservoir, Meyer and Rosenthal created a chrono-cultural sequence largely based on artifact types for the Los Vaqueros area (Milliken et al. 2007). This sequence presents the updated Los Vaqueros scheme in relation to both the Archaic-Emergent scheme (e.g., Fredrickson 1974) and the Early-Middle-Late scheme (e.g., Bennyhoff and Hughes 1987).

Notable developments and refinements of the chrono-cultural framework for the Los Vaqueros area directly resulted from the cultural resources mitigation measures stemming from compliance with both CEQA and NHPA (Price et al. 2008). These include

- Extending the Lower Archaic 2000 years deeper in time to at least 10,000 B.P. (8050 B.C.), formerly the province of the PaleoIndian period according to Fredrickson (1974), and a time not covered by the CCTS (e.g., Bennyhoff and Hughes 1987).
- Extending the beginning of the Middle Archaic 1000 years back in time to around 6000 B.P. (4050 B.C.), whereas the Fredrickson Middle Archaic originates around 5000 B.P. (3050 B.C.) (1974).
- Dividing the Upper Archaic to include an Upper Archaic/Emergent transition period.
- Dividing the Emergent period into a Lower and an Upper Emergent period.

Precontact components from sites investigated in the Proposed Project area include one from the Lower Archaic, four from the Middle Archaic, six from the Upper Archaic, seven from the Upper Archaic/Emergent transition, and six from the Emergent.

Lower Archaic Period

The earliest occupations during the Lower Archaic period are characterized by high residential mobility evidenced by short-term occupation of sites. Milliken et al. (2007) refer to this as a generalized mobile forager pattern. Artifacts characteristic of this period include millingslabs and handstones for processing plant resources such as seeds and nuts and wide-stemmed Projectile points. The radiocarbon date of 7920 cal B.C. represents the earliest date for cultural deposits from this period in the Kellogg Creek valley, obtained from a discrete charcoal concentration beneath an inverted millingslab at CA-CCO-696. The deposit lies at a depth between 390 and 415 centimeters (Price et al. 2008).

Other characteristics of the Lower Archaic period include the importation of obsidian from the North Coast Ranges and the preference for a tightly flexed burial position. CA-CCO-696 yielded a tightly flexed burial at a depth of 325 centimeters, radiocarbon-dated to 5490 cal B.C. A few hundred meters from CA-CCO-696, the oldest documented grave in the Kellogg Creek valley was recovered from CA-CCO-637, radiocarbon-dated to 6570 cal B.C. (Meyer and Rosenthal 1998).

Middle Archaic Period

During the Middle Archaic period, residential mobility had decreased, and base camps were established. Groundstone mortars and pestles replaced handstones and millingslabs by 4000 cal B.C. (Milliken et al. 2007). A wooden mortar was recovered with a groundstone pestle at CA-CCO-637, radiocarbon-dated to 3800 cal B.C. (Meyer and Rosenthal 1997). A groundstone mortar was recovered in association with deposits containing the remains of acorns and wild cucumber, dating to at least 5,700 years ago, at CA-CCO-696 (Rosenthal and Meyer 2004; Wohlgemuth 2004). In addition to acorns, camp residents ground manzanita seeds and grey pine nuts. Despite the shift in plant resource processing tools, there is no documented change in associated floral assemblages throughout the Archaic period (Meyer and Rosenthal 1997). During the Middle Archaic period, burial positions became more variable, ranging from flexed to extended positions. The first cut shell beads are found in mortuary contexts. Obsidian was obtained from distant sources (Price et al. 2008).

Upper Archaic Period

During the Upper Archaic period, residential mobility decreased and fixed villages were established. Plant resources from both the uplands and grassland-savanna were gathered, with an increased use of small seeds but a continued preference for acorns. Bedrock milling stations, characterized by mortar cups ground into boulders and bedrock outcrops, first appeared between 1600 and 1300 B.P. (A.D. 350 to 650), based on stratigraphic evidence (Meyer and Rosenthal 1997). Bedrock milling stations are difficult to date because the mortars in the bedrock outcrops are only rarely found in stratigraphic association with intact midden containing datable evidence.

The Upper Archaic period burial customs once again show a preference for flexed burials. A difference in social status has been inferred from the differential distribution of uniformly made shell beads and ornaments in mortuary contexts. The shell also indicates the continuing importance of trade and exchange (Price et al. 2008).

Upper Archaic/Emergent Period Transition

During the Upper Archaic/Emergent period transition, there was a shift in burial practices and land-use patterns. Bedrock milling stations offer tangible evidence that more locations in the

valley were utilized, but in contrast to the preceding period, occupations were brief and were probably associated with resource acquisition and processing. Occupation of the valley was more varied, including shorter-term use of both the lowland and the upland, where bedrock milling stations were often located. Burial customs shifted once again, to a preference for extended positions (Meyer and Rosenthal 1997). Obsidian use increased from earlier periods, but other exchange items were absent.

Emergent Period

By the Emergent period, fixed villages were once again established in the lowlands and bedrock milling stations continued to be used for bulk processing of grassland-savanna small seed resources and upland nut and berry crops. Obsidian use increased, inferred by the importation of obsidian cobbles and minimally modified flake blanks, exclusively from Napa Valley sources (Meyer and Rosenthal 1997). Milliken et al. (2007) noted the introduction of the bow and arrow at the beginning of this period. The people, traditions and culture of the Emergent Period were most likely those encountered by the earliest European visitors to the area in the second half of the eighteenth century (Price et al. 2008).

Ethnographic Setting

At the time of European contact, the Proposed API/APE was within the territory of the Patwin, a southern Wintun linguistic group (Kroeber 1925, 1930; Barrette 1908), and the Ompin, Bay Miwok, a western Utian linguistic group. Two analytical zones immediately surround Suisun Marsh— the Bay Area (Bay Miwok and Ohlone) and Middle Sacramento Valley (Patwin). Pre-mission populations in these regions were estimated as 2.1 to 4.0 persons per square mile in lands southeast of the marsh (Bay Miwok), increasing to 4.1 to 8.0 to the west and north (Meyer et al. 2013).

Modern representatives of the Bay Miwok, Ohlone, and Patwin heritages are still present in the area and are active in archaeological work. For a list of contacts from these tribes see Appendix C.

The Patwin People

The Patwin comprise the southern branch of the Wintun people in Northern California who were native inhabitants of California since approximately A.D. 500 (Golla 2011). The extent of the territory they occupied included the southwest portion of the Sacramento Valley, from the lower hills of the eastern North Coast Ranges to the Sacramento River, from Princeton south to San Pablo and Suisun Bays and into Napa Valley as far north as Calistoga. Kroeber (1970) puts the 1770 population of the Wintun, including the Patwin, Nomlaki, and Wintu proper, at 12,000 individuals. Kroeber noted that there were permanent habitation sites of the Patwin along both banks of the Sacramento River, where small knolls were sufficient to protect the inhabitants from severe winters. Patwin were also commonly found along seasonal streams and springs in the foothill regions fronting the western margin of the Sacramento Valley. Many of these have been documented for the area between Knights Landing and Colusa far north of the Proposed Project area (Heizer and Hester 1970). One important Patwin village was Yulyul, the main village of the Suisun Patwin people of the Suisun Bay region is believed to be where Rockville is located today northwest of the Proposed Project area (Milliken 1995). In the late 1790s, Patwin were first taken as converts to Mission Dolores in San Francisco and Mission San Jose. Sam Yeto, later baptized as Chief Solano, is described as the principal Suisun Patwin chief whose authority extended over an extensive area reaching from Petaluma Creek to the Sacramento River. Chief Solano lived at a Patwin village just south of Rockville. In the 1840s, he received the Suisun land grant, extending

east from Rockville to Fairfield, from the Mexican government (Solano County 2023). Another village site, Tolenas, was identified by Kroeber about 15 miles northwest of the Proposed Project site (Johnson 1978).

The Patwin were organized into a principal village and a few satellite settlements. These groups were small, autonomous, and sometimes bound by the limits of a small drainage. Each group had a head chief, and each village had a chief who administered its economic and ceremonial activities. The position of chief was usually inherited through the male line, but village elders occasionally chose chiefs. McKern (1922) presented Patwin social structure in terms of three systems: the patrilineal family, the family social group, and the household unit.

The patrilineal family and descent were important features of Patwin social life, and the authority bestowed on the headman of each patriarchal family was undisputed, except in matters of tribal authority. The family social group is a larger unit that includes the husbands of female patrilineal family members and is unified by the authority of the family headman. Matrilocal residence was customary among the Patwin, and husbands routinely remained with their wife's families at least until they acquired enough wealth to establish an independent household (Kroeber 1932, 1970; McKern 1922, 1923).

Patwin subsistence relied on hunting, fishing, and gathering a wide variety of plant resources that were within their territory. Acorns were a major part of their diet and were obtained from hill and mountain oaks communally owned by the tribelet. Other easily gathered resources included blackberries, elderberries, wild grapes, new tule shoots, roots and bulbs, honey, salt (acquired from burning salt grass), and tobacco (Kroeber 1970). Kroeber's informants, however, did not report familiarity with many plants (e.g., buckeye, hazelnut, manzanita, etc.) that are dietary staples among other Native American groups.

Ethnographic records indicate that large game (e.g., deer, tule elk, antelope) were captured using nets or shot using bows and arrows. Kroeber reports that two men would hold a wide meshed net while other hunters would drive deer into it, and waterfowl (ducks, geese, mudhens, quail, etc.) were also captured using nets. Fish were also a prime resource, and certain fishing sites were privately owned. Fish (such as salmon, sturgeon, perch, chub, sucker, hardhead, pike, and trout) and other riverine resources (such as turtles and mussels) were caught with bone fishhooks, nets, seines, and weirs. Food resources were generally stored in bins and granaries, which were made of sticks set into the ground and were roofed with tules.

The Patwin manufactured a variety of utilitarian and ceremonial/luxury items, including baskets, stone tools, mortars and pestles, shell beads, and clothing. Coiled and twined baskets of willow and split tule were used for various purposes, including food collection, preparation, serving and storage; baby carriers; and grave goods that were interred with the dead. A variety of tools (i.e., projectile points, bifaces, drills, scrapers, and knives) were manufactured from obsidian, chert, and basalt for both utilitarian (skinning, butchering, etc.) and ceremonial (such as burial accompaniment) purposes. Pestles and mortars made of oak and stone were used to process both plant and animal resources. Shell beads were also manufactured for personal adornment and as a medium of exchange. Clothing was generally minimal, and "men went without any covering, women wore skirts or aprons of tule or shredded bark" (Kroeber 1925).

The Patwin traded for various commodities and subsistence resources using clamshell disc beads as a medium of exchange. Kroeber referred to Patwin territory as a center for several religious sects among groups of central California Native Americans. These sects were generally based on the organization of male secret societies and are characterized by Kuksu or "bighead" dances. Kuksu emphasized curing and shamanistic functions, and its ceremonies generally consisted of

impersonating spirits who journeyed from their home to a village, blessed the village, and then returned home (Kroeber 1925).

The Miwok People

The Ompin group of Bay Miwok are associated with the eastern and southeastern Suisun Marsh edges, where the San Joaquin and Sacramento rivers enter the Suisun Bay (Meyer et al. 2013). Within the Bay Miwok grouping were the Saklan, Chupan, Wolwun, Julpun, and Ompin (Beeler 1955; Bennyhoff 1961). Archaeological and linguistic data support the assertion that the Miwok had arrived in the Diablo and Delta area before A.D. 1, displacing the earlier Hokan-speaking people that lived in the region (Wiberg 2010).

The Bay Miwok were hunter-gatherers, taking advantage of the abundant natural resources in the Delta and alluvial plains (Levy 1978). This lush environment was able to sustain a relatively dense population despite the lack of agriculture. The Delta marshland was very productive as were the Central Valley grasslands. Less productive portions of the regions included the uplands, which were able to support a mixture of oak and conifer trees (Wiberg 2010).

Like many other California groups, acorns were a staple carbohydrate of Bay Miwok foodways. In addition to this, however, a variety of flora and fauna were available for foraging and hunting. These included "several types of berries, clover, wild onions, and carrots, mammals, fish, reptiles, shellfish, and insects" (Wiberg 2011: 14). Vegetal resources also provided the material for cordage and weaving baskets. Baskets were used for cooking, as utensils, storage containers, water jugs, and as trays for leaching and drying acorn meal (Kroeber 1925:467).

Importantly, the Bay Miwok were not passively acquiring their subsistence from the environment. They were, in fact, very active in managing and improving their environment through fire. By burning grass and brush annually, they were able to better control their natural resources. Their foraging for deer and rabbits was improved by eliminating much of the area in which the deer and rabbits would hide. Periodic burning also kept them safe from predators and neighbors and improved the land's productivity (Wiberg 2010).

The Bay Miwok were organized into "tribelets," which were "small independent group[s] of usually related intermarried families occupying a specific territory and speaking the same language or dialect" (Wiberg 2010: 22). Notably, a great diversity of languages was present in contact-period California, with some dialects only spoken by very small groups. These groups were not isolated; however, as trade and marriage enabled tribelets to access resources they otherwise would not have accessed. Other aspects of social life that would bring people together included regional festivals and religious dances. The division of labor within California tribelets was usually distinguished between women's work in food harvesting, preparation, weaving, and childrearing and men's work in hunting, fishing, trade, warfare, and the training of older sons.

When the Spanish arrived, trade patterns that were thousands of years old were in place. Archaeological evidence suggests that these trade patterns brought goods from as far as a few hundred miles away based on the sourcing of obsidian artifacts. Mollusk shell beads and ornaments "evolved through many different and definable types through the millennia," which allows archaeologists to both estimate a relative date for a site and the social and cultural position of the people who once lived there (Wiberg 2011: 15).

The territory of the Saklan was "the interior valleys from Lafayette to Walnut Creek and Danville" (Cook 1957: 147). Although the central village may have been near modern Walnut Creek, "at least two smaller, subsidiary Saklan settlements were known to exist" at the time of Spanish

colonization (Fredrickson 1968). The location of these settlements is currently unknown. Although Spanish observations suggest that total Saklan population in the early nineteenth century was between 100 to 300 people (Fredrickson 1968), this number may have been much higher. Based on the group's absorption of 40 people lost to missionization between 1794–1798, as well as the conversion of others and attrition due to disease and food supply inconsistencies, Cook (1957: 143, 147) suggested that the preconquest population must have reached “at least 300 and very likely was much greater.”

More comprehensive ethnographic and archaeological summaries of the Saklan and their neighbors in what is today Contra Costa County may be found in *The Handbook of North American Indians, Volume 8: California* (Levy 1978:398–413), *Handbook of California Indians* (Kroeber 1925: 442–461), and *California Archaeology* (Moratto 1984).

Historic Overview

The history of northern California, Solano County, and the Proposed API/APE, in particular, can be divided into several periods of influence to establish a historic context to assess the potential significance of historic sites in the Proposed API/APE. Due to its location 40 miles (65 kilometers) east/northeast of San Francisco, the Proposed API/APE was largely isolated from the Spanish and Mexican periods of California. Therefore, events associated with the Spanish and Mexican periods, and cultural remains from those periods, are not expected to be reflected in the Proposed API/APE but are discussed briefly as a point of reference. The history of Pittsburg and Collinsville were reviewed because the Proposed API/APE is in both Pittsburg and Collinsville. The history of railroads was examined due to the significance of railroads to the commercial development of the Proposed API/APE and surrounding area and due to the fact that a spur from the Burlington Northern Santa Fe (BNSF) Railway line was recorded as part of this Proposed Project (site AG-002). As the Proposed Project involves constructing new transmission line infrastructure, and existing transmission lines surround the Proposed Project site, the history of transmission lines was reviewed. In Attachment B, the maritime history of the Proposed API/APE and the surrounding area—including steam vessels, freight, and passenger traffic—was investigated due to the Proposed Project's crossing of the Sacramento River and proximity to the shores of the Sacramento River.

Spanish Era (1769–1821)

The earliest historical accounts of the area come from the Spanish explorers who ventured east of the Bay Area in the late eighteenth century. In 1775, when Captain Juan Manuel Ayala's expedition explored the San Francisco Bay, some of his men may have ventured up the Sacramento and San Joaquin rivers during three explorations of the Bay that yielded the first accurate maps of San Francisco Bay (Kamiya 2014). In 1776, the Anza-Font expedition traveled along the southern shore of Suisun Bay until reaching Antioch, where they noticed numerous campsites before turning southeast in an attempt to cross the tule swamps (Cook 1957). There is no evidence that the Spanish explored north of the river at the site of the Proposed Project during this period, but they likely passed within a few miles of it on the southern side of the river (Farris et al. 1988). There are no documented Spanish settlements or structures in the Proposed Project area.

At the time of the Spanish arrival, Solano County was home to the Patwin Indians. Some of their village places have survived phonetically in such modern places as Suisun, Soscol, Ulatis, and Putah (Solano County 2023).

Mexican Era (1822-1848)

Under the Spanish, the missions controlled the land. After Mexico seceded from Spain in 1821, land was granted to private citizens, a practice that increased significantly after the 1833 act of the Mexican legislature that established the secularization of the missions (JAH 2005). By 1845, the last of the mission land holdings were relinquished, opening the way for the large ranchos common to California in the mid-1800s. Predominant land uses on the ranchos were the raising of livestock and ranching. The Proposed API/APE straddles two Mexican-era land grants, or ranchos, within Solano County and Contra Costa County.

The northern of these was the Rancho Ulpinos. It included 17,726 acres in southern Solano County, including what would become the cities and communities of Collinsville, Rio Vista, Newtown, Birds Landing, and Montezuma. This Rancho includes two watercourses: the Sacramento River and the Estero Ulpinos. This Rancho was given to John Bidwell in 1852 by Governor Manuel Micheltorena (Perez 1982; U.S. District Court [USDC] 1857).

The 1848 Treaty of Guadalupe Hidalgo that ceded California to the U.S. provided that the land grants would be honored. As required by the Land Act of 1851, a claim for Rancho Los Ulpinos was filed with the Public Land Commission in 1852, and the grant was patented to John Bidwell in 1866 (USDC 1857).

The other rancho in the Proposed API/APE of the Proposed Project is the Rancho Los Medanos, immediately south of the Rancho Los Ulpinos. It is composed of 8,853 acres, including the watercourses of the San Joaquin River and the Suisan Bay, and covers the modern-day cities of Pittsburg and Antioch (Perez 1982).

The ranch was granted in 1835 to Jose Antonio Mesa and Jose Miquel Garcia. Mesa and Garcia sold the southern half of their rancho to Colonel Jonathan D. Stevenson in 1849 and the northern half to James Walsh, Michael Murray, and Ellen Fallon in 1850. There was confusion about the orientation of the grant, and, in 1851, Stevenson arranged an exchange of deeds, whereby he received the western half of the rancho, and Walsh, Murray, and Fallon received the eastern half (Supreme Court of California 1904).

As required by the Land Act of 1851, a claim for Rancho Los Medanos was filed with the Public Land Commission in 1852, and the grant was patented to Jonathan D. Stevenson and others by 1862 (Hoffman 1862). There are no documented Mexican structures associated with these ranchos documented in or near the Proposed Project area.

Historical Era (1848-present)

Prior to the 20th century, the history of both Contra Costa and Solano Counties was overwhelmingly ranching and farming in character (EDAW 2008). During Mexican occupation, and for some years after that, cattle raising was the principal industry (EDAW 2008).

In the late 1840s and 1850s, former gold seekers and pioneers began settling in Contra Costa and Solano counties, where they raised livestock and cultivated fruit orchards, vineyards, wheat, barley, and oats (EDAW 2008). Produce and livestock were transported overland by wagons to the many sloughs along the river, and then shipped by water to waiting markets. In the late 19th century, the development of the railroads spurred the economy by allowing the shipment of local goods to East Coast markets, significantly bolstering economic development, agricultural production, and population growth (EDAW 2008)

Twelve townships were established in Solano County between 1850 and 1871. Although the largest towns were adjacent to San Pablo and Suisun Bays, most towns were situated at the ends of sloughs or channels that primarily ran through the eastern portion of the county including the small town that became Collinsville. These earliest communities in Contra Costa Counties, such as Antioch, Pittsburg, and Walnut Creek, have grown into thriving cities and towns (McCullough 2022).

History of Pittsburg

Its earliest recorded history of the Pittsburg area dates to 1839 when the Mexican government granted nearly 9,000 acres of the Rancho Los Medanos to brothers Jose Antonio Mesa and Miguel Jose Mesa Garcia. In 1849 the land was purchased by Col. Jonathon Drake Stevenson and Dr. William C. Parker. The first streets were laid out by future U.S. Army Gen. William Tecumseh Sherman (City of Pittsburg 2022).

The area soon became known as New York Landing and, by 1855, was a fishing village of approximately 500 residents. By the 1870s the community thrived on fishing and canning industries, which would last for over 100 years.

Coal was discovered in the Mt. Diablo foothills of Contra Costa County and became one of the biggest industries in the county from the 1860s until the early 1900s (McCullough 2022). With the discovery of coal, the town of New York Landing became known as Black Diamond and shown on local maps for the first time in 1868 due to the influence of the Black Diamond Coal Company. Steam powered engines moved coal cars down the tracks along present day Railroad Avenue to the waterfront docks terminating at the waterfront coaling station and offloaded to awaiting ships on the way to market. The boom ended in 1885, and the company moved to Washington state to work a new claim (City of Pittsburg 2022)

During the 1870s, commercial fishing became a lucrative endeavor. The Black Diamond Cannery opened at the foot of Los Medanos Street. By 1882, a network of 10 canneries formed along the Sacramento Delta. An industry was born with fishermen, packing plants, and boat builders dominating the local waterfront for the next 80 years. The town boasted the largest Delta fishing community in the state, made up primarily of Sicilian immigrants, the families of which have remained in the area for generations (City of Pittsburg 2022).

Charles Appleton Hooper, who became the local father of industry, was a wealthy lumber baron who purchased the Rancho Medanos land grant in 1900. He encouraged the city government to supply electricity to the town, and, in 1903, the town incorporated as Black Diamond. A rubber works and a steel company were started along with a large foundry. Black Diamond industry and manufacturing created thousands of living wage jobs. In 1911, the city changed its name to Pittsburg because of the newly founded steel industry (City of Pittsburg 2022).

In 1942, Camp Stoneman was built as the main point of embarkation on the west coast during WWII. It closed in 1954, and its property became the city of Pittsburg's and was used for a school, commercial and residential development (Pittsburg Historical Museum 2024).

History of Collinsville

Early in 1846, Lansford W. Hastings acting as an agent responsible for finding a site for a Mormon colony chose an area in today's southeastern Solano County on the Sacramento River near present day Collinsville (Kyle 1990). The Mormon movement to California was part of a general exodus from the east and midwest United States. The Mormons had been forced to leave their homes in Illinois

and headed "beyond the Rocky Mountains." At the same time, those members of the Church in the eastern states were directed to proceed by ship to a spot on the Pacific Coast (Baldrige 1956).

In 1846, 238 Mormon immigrants landed in San Francisco on a ship from New York as an initial attempt to establish a Mormon colony in Northern California (McPhate 2019). Within a year, they built 100 permanent structures in San Francisco, including the first bank, library, and English-speaking school. The group's leader, Sam Brannan, started the city's first newspaper, the California Star, and became its first millionaire. Other Mormons founded towns, pioneered farming, and became among the first gold miners (McPhate 2019). It was around this time that Hastings built a four-room adobe in anticipation of a large land grant from the Mexican government to accommodate the Mormon arrivals (Bowen 2000).

The event known as the Bear Flag Revolt changed Hastings plans. In June 1846, 33 American immigrants rebelled against the Mexican government in the town of Sonoma because they had not been allowed to buy or rent land and had been threatened with expulsion. This short-lived rebellion added to the tension of the recent outbreak of the Mexican-American War (NPS 2022). In the wake of these hostilities, Hastings abandoned the adobe house, which remained unoccupied until 1852. Subsequently, a series of owners lived in the adobe house until PG&E bought the land in 1964. The old, abandoned adobe still stands, but it is rapidly deteriorating because of a lack of maintenance and leaking roof (Bowen 2000).

The first permanent settler in Montezuma Township, as Collinsville was then called, was L.P. Marshall. He moved into the Hastings adobe, named it the "Montezuma House," and lived there for the next quarter of a century (Bowen 2000). In 1859, Mr. C.J. Collins settled on government land where Collinsville now stands. He surveyed the town plat and built a wharf and store (Bowen 2000).

By 1861, the Collinsville wharf was built, and the town applied for an official post office, allowing for improved business and trade in the area (Supreme Court of California 1882). In 1861, George W. Miller was appointed the first postmaster. Collinsville soon became an important shipping port for hides and tallow (Bowen 2000).

The small fishing village was approved for a steam ferry in 1868 to travel between Collinsville, New York Landing, and Antioch. Collinsville soon became a major ferry stop for hides and tallow crossing the Carquinez Strait while traveling to the cities farther south. In 1867, the town was purchased by S. C. Bradshaw, who renamed the town Newport and began selling some 29,000 lots, many of which were submerged at high tide. His scam failed, and the sheriff seized the town. The land was later sold to E. I. Upham who returned the name Collinsville to the town in 1872 (Bowen 2000).

At one point, before the bridges were built, one of the passenger railroad lines between Sacramento and San Francisco passed through Collinsville. The train would unbuckle at Collinsville and be pulled across the Delta by barge (requiring several trips), and then be rebuckled on the other side at the foot of Railroad Avenue in Pittsburg and resumed its trip to San Francisco.

By the 1870s, Collinsville had a large salmon cannery and hotels and stores that serviced its workers. F. E. Booth built the salmon cannery in 1873 and employed many Italian fishermen, who lived on stilted houses in the marsh areas dubbed "Little Venice" (Kyle 1990). When the cannery closed, Collinsville began declining; the population fell to just eight people and some 20 homes. Although the population has increased slightly since then, a fire in 2014 destroyed half of the town.

History of Railroads

In the late 1840s and 1850s, produce and livestock were transported overland by wagons to the many sloughs throughout the county, and then shipped by water to waiting markets. In 1868, with the completion of the California Pacific Railroad through Solano County, the shipment of goods to East Coast markets was accelerated and expanded (EDAW 2008)

In 1913, the Oakland, Antioch, and Eastern Railway, a high-speed electric interurban railway, opened its 93-mile route from San Francisco to Sacramento through largely unpopulated parts of southern Solano County (Boehle 2013). In 1928, the Sacramento Northern Railway purchased the railway, but the Great Depression and the popularity of the automobile contributed to the end of passenger service in 1940; by 1987, the railway had been abandoned (EDAW 2008).

The coming of the railroads in the latter part of the 1800s and the early 1900s to Contra Costa County made the industrial development that was occurring in Pittsburg even more attractive (McCullough 2022). The Central Pacific Railroad (CP) was chartered in 1862 by Congress to build a railroad eastward from Sacramento to complete the western part of the first Transcontinental Railroad in North America. The CP was the first transcontinental railroad to pass through present-day Pittsburg when the tracks were built in 1878 (Pittsburg Historical Museum 2024).

The Cornwall railroad station served passengers as well as freight. Cornwall was a small enclave separate from the village of Black Diamond but would eventually be annexed into Pittsburg in 1911. Black Diamond was a commercial fishing port situated on the Suisun Bay and the railroad made possible rail shipping of fish which up to that point had been shipped to market (Pittsburg Historical Museum 2024).

The Black Diamond Railroad (BD) was active at this time, which was a short rail line shuttling coal from the local mines in the foothills to the waterfront Black Diamond coaling station. Where the CP crossed the BD railroad, a train trestle and large earthen embankment was built to span the CP line and allow for uninterrupted service by both railroad lines (Pittsburg Historical Museum 2024).

In 1888, the Southern Pacific (SP) bought out the CP. In turn the Union Pacific (UP) merged with the SP in 1996, assuming the Union Pacific name. Today, manufactured goods from local and area industry are what can be seen along the local rails and switchyards. The UP mainline is known as the Mococo Line and is under the UP Tracy Subdivision of their railroad network (Pittsburg Historical Museum 2024).

History of the Transmission Lines

The Pacific Gas & Electric (PG&E) Company was formed in 1905 by the merger of the San Francisco Gas Company and the California Electric Company. The need for transmission lines in northern California began during the 1920s, when the demand for electricity grew in relation to commercial and residential development. Towers that predate World War II still exist in the major cross-tie electrical grids linking various power plants and substations. These early major electrical transmission lines remain critical to providing a reliable form of electrical power to much of California. The post-World War II period of electrical transmission generation and development was spurred on by rapid population growth and increasing demand from commercial and residential customers (Coleman 1952).

PG&E's 230kV Pittsburg-Tesla transmission line was not the first electrical high-voltage tie line built in the state nor in Contra Costa County or the East Bay Area, which witnessed electrical transmission tower development dating to the 1920s (Supernowicz 2017). PG&E's 230kV Pittsburg-Tesla transmission line that runs a distance of approximately 31 miles from City of Pittsburg through

unincorporated portions of Contra Costa and Alameda counties was constructed as part of this expansion. The Pittsburg-Tesla line (running from the Pittsburg Substation to the Tesla Substation) was constructed in 1959-1960 and consists of 147 towers. It is considered by PG&E as a critical supply line for Contra Costa and Alameda counties (Lang 2008). The transmission towers of the 1960s were made of steel, riveted together with lattice and bents for support. They had not changed much since the 1920s. Most of the existing steel high-lead electrical transmission towers in California date to after World War II. Transmission lines were attached to the top of the tower along a slightly arched or V-shaped riveted steel lattice brace. In an electrical power grid or transmission system, the electricity first went to a transformer at the power plant that boosted the voltage. The long thick cables of transmission lines were made of copper or aluminum because they have a low resistance (Supernowicz 2017).

Research Design

The following research themes identify important questions that may be addressed by the types of resources and data the Proposed API/APE has the potential to contain. The research themes discussed below cannot be addressed using data from other sources, such as archival records, but can only be addressed using the archaeological record (although in conjunction with the documentary record). Research themes outline the questions that can be asked of the archaeological record and the types of data required to answer them. The purpose of identifying relevant research themes here is to guide the evaluation of archaeological discoveries. If archaeological remains are encountered during Proposed Project ground disturbance, determining their ability to address the following research themes is critical to evaluating the significance of the deposits.

Research-driven archaeological investigation typically focuses on broad research themes of local relevance. Themes must be broadly defined since the nature of the specific data used to address them is generally not known in advance, and it is, therefore, not possible or practical to address all questions that may be relevant. This will ensure that fewer restrictions will be placed on interpreting data recovered from a site. These broad thematic questions concern issues such as chronology, subsistence, settlement, and trade or exchange. Precontact research themes are summarized in Table 4-1, and historical research themes are summarized in Table 4-2.

Precontact Research Themes

Although no precontact archaeological deposits have been discovered in the Proposed API/APE, P-48-000041 is a multicomponent site that includes the Hastings adobe. It is near the Proposed API/APE and the precontact component was observed on a small knoll near the adobe. The site appears to have been a small campsite (Elsasser 1956). Unfortunately, this precontact deposit was never investigated so no data has been collected from it.

Table 4-1. Native American Research Questions and Data Requirement

| Culture Chronology | |
|------------------------------|---|
| Potential Research Questions | <ol style="list-style-type: none"> 1. How can the materials present be used to refine the cultural chronology of the San Jose area? 2. What archaeological cross-dating determinations can be made using diagnostic artifacts independent of other chronometric evidence? |

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| | |
|-------------------|--|
| | 3. Can radiometrically datable materials be used to place stylistically temporally diagnostic artifacts into particular periods or phases? |
| Data Requirements | Temporally diagnostic artifacts associated with datable materials. Features and stratified deposits with datable materials. |

Subsistence

| | |
|------------------------------|---|
| Potential Research Questions | 1. What are the subsistence patterns represented by the archaeological deposits (e.g. terrestrial versus aquatic resources)? 2. Can changes in diet be observed in floral, faunal, and human remains? What do these reflect in terms of resource intensification and depression? |
| Data Requirements | Archaeological resources with functionally and temporally diagnostic artifacts and features, including floral and faunal remains. |

Settlement

| | |
|------------------------------|--|
| Potential Research Questions | 1. What is the nature of the evidence for seasonal or permanent or semi-permanent residential features that would suggest villages (e.g. structures, storage features, midden deposits, etc.)? 2. What items represent settlement practices? Are changes in the settlement practices observable in the archaeological record? 3. What resources were locally available for exploitation? Was the area suitable for long-term habitation or short-term resource exploitation use? |
| Data Requirements | Archaeological resources with functionally and chronologically diagnostic artifacts and features, including floral and faunal remains. |

Trade and Exchange

| | |
|------------------------------|--|
| Potential Research Questions | 1. Are exotic raw materials, especially obsidian, tools/items, or trade goods represented in the archaeological resource? What is the origin of these items? |
| Data Requirements | Archaeological resources with functionally and chronologically diagnostic artifacts and features, including personal, ceremonial, and trade items. |

Historic Period Research Themes

Buried and surface historic archaeological deposits have been recorded in the Proposed API/APE. These included six previously recorded sites: P-07-002956 (two 230 kV PG&E transmission lines that are part of the Contra Costa-Moraga/Pittsburg-Tesla PG&E Electrical Transmission Lines), P-48-000981 (three historical roads established in 1891, [i.e., Grizzly Island Road, Collinsville Road, and Chadbourne Road]), and four farmstead sites (P-48-000124—a barn with a small orchard, domestic and structural refuse, a possible well, and agricultural equipment; P-48-000125 (CA-SOL-284H)—remains of a water conveyance system consisting of a covered well hole and a water pipe; P-48-000128 (CA-SOL-287H)—a possible homesite; and P-48-000140—a possible homesite location with pepper trees.

In addition to these, another five historic sites were recorded in the 0.50-mile buffer around the Proposed API/APE. These include a rail line of the Sacramento Northern Railway (P-07-000489), three homesite/ranch sites (P-48-000139 [CA-SOL-298H], P-48-000416 [CA-SOL-299H], and P-48-000521), and the Hastings adobe (P-48-000041).

mile buffer. The records search aims to identify previously recorded cultural resources within and in the vicinity of the data center portion of the Proposed API/APE.

The results from the NWIC, received on June 13, 2023, identified 12 previously recorded cultural resources within the search area (Table 4-3 and Table 4-4). Of the 12 previously recorded resources, one is precontact and 11 are historic, with one of these historic resources being multicomponent. Six of the 12 previously recorded resources are within the Proposed API/APE. Of the six resources within the Proposed API/APE, all six are historic. Additionally, one multicomponent site (P-48-000041) is immediately adjacent to the Proposed API/APE. These resources are briefly described below. The historic sites within the Proposed API/APE to the north of the Sacramento River represent the early American settlement period and late nineteenth century agricultural and town development phases that are characteristic of this region (Tremaine 1991:4). The historic site within the Proposed API/APE to the south of the Sacramento River is two transmission lines. The results from the NWIC identified 43 previous cultural resource investigations within the search area (Table 4-5 and Table 4-6). Of the 43 previous investigations, 27 have surveyed all or portions of the Proposed API/APE. Within the last 10 years, only one previous investigation (S-049865) has surveyed portions of the Proposed API/APE, resulting in 180.7 acres (8.3 percent) of recent survey coverage.

Cultural Resources

The records search determined that the following previously recorded cultural resources are within or immediately adjacent to the Proposed API/APE:

P-07-002956

P-07-002956, is the Contra Costa-Moraga/Pittsburg-Tesla PG&E Electrical Transmission Lines which consists of two 230 kV PG&E transmission lines that traverse Contra Costa County from east to west. The line begins in Antioch, leaving the substation as two parallel transmission lines, before it separates southeast of Pittsburg into two lines of towers. The southernmost line is commonly referred to as the "Contra Costa-Moraga" electrical transmission line that connects the power plant at Antioch with the substation in Moraga, a distance of 27 miles. The line begins in Antioch as two parallel transmission lines and then splits in Section 29, southeast of Pittsburg, with one line traveling north, forming part of the Pittsburg-Tesla transmission line, while the southern-most line heads southwest towards Moraga. The southern line appears to be oldest, perhaps built in the late-1920s, while the northern line appears to have been built prior to 1943. Both lines include riveted steel towers with three horizontal arms or masts mounted to the upper half of the towers. The subject's rectangular, truncated-shaped, lattice transmission tower rests on four concrete piers. A form of "X" bracing with radiating steel lattice braces is used on opposing sides of the tower for support. The three steel arms, also containing lattice bracing, connect to twisted or elongated insulators attached to high lead cables that transmit electricity from tower to tower. The line of towers are located on light-agricultural, open-space land (Supernowicz 2017). The Pittsburg-Tesla 230 kV transmission line (Pittsburg-Tesla line) spans the area between the Pittsburg Substation, in the City of Pittsburg, and Tesla Substation, in northern Alameda County. PG&E owns and operates the existing line. The line is approximately 31 miles long (24 miles in Contra Costa County) (Supernowicz 2017).

Dana Supernowicz of Historic Resources Associates assessed the transmission lines for NRHP eligibility in 2017 (Supernowicz 2017). Based on two NRHP criteria (A [their relationship to the development of PG&E and the state electrical grid] and C [the towers appear to have been a design

innovation at the time of construction]), the transmission lines were recommended as significant both individually and as part of a linear district comprised of multiple steel transmission towers and electrical lines tied to substations and power generating plants (Supernowicz 2017). The transmission lines appear to retain good integrity of design, materials, setting, association, and feeling, having minimal or no apparent major alterations except for upgrades to the lines and insulators. Conversely, hundreds of similar transmission towers were built throughout California. The power lines were not the first electrical high-voltage tie line built in the state nor in Contra Costa County or the East Bay Area, which witnessed electrical transmission tower development dating to the 1920s. The post-World War II period of electrical transmission generation and development was spurred on by rapid population growth and increasing demand from commercial and residential customers.

P-48-000041

P-48-000041 is a multicomponent site consisting of a precontact campsite and the Hastings Adobe. The Hastings Adobe was initially constructed in 1846 by Lansford W. Hastings, a representative of the Mormon Church, who was tasked with establishing a Mormon settlement on the West Coast. The building was initially constructed with sun-dried bricks made from native clay adobe and consisted of four rooms and an attic. Hastings abandoned the adobe shortly after the United States claimed the land, and the Mormon community lost interest in the settlement. In 1853, the adobe was unofficially claimed by L. P. Marshall and his two sons, who made repairs to the adobe by adding a wooden frame around the entirety of the structure. The Marshalls occupied the structure until 1908, when the S. O. Stratton family purchased it. Further repairs and maintenance were done to the structure by the Strattons until it was ultimately purchased by PG&E in 1963 (Young 1971). Mr. Stratton noted an adjacent precontact campsite where he “used to pick up arrow points” (Elsasser 1956). However, by 1956, A. B. Young noted that the campsite had been covered by sterile sandy soil and had been disturbed by modern agricultural processes (Young 1971). The Hastings Adobe was evaluated for eligibility in 1971 and was nominated to the NRHP in 1972. The Hastings Adobe is approximately 145 feet outside of the Proposed API/APE.

P-48-000124

P-48-000124 consists of a barn, the remains of a water tower, three depressions (of which two may be privies and one a possible cellar), and a eucalyptus windbreak. Furthermore, “local informants indicated that a two-story house once stood over the largest of the depressions” (Crist et al. 1980). Associated materials include brick, ceramic, metal, and glass debris scattered throughout the site boundary, with denser concentrations near the pepper tree. This site appears to be frequented by grazing goats. This site has not been previously evaluated for NRHP/CRHR eligibility.

P-48-000125

P-48-000125 is a historic artifact scatter first recorded in 1980 by C. Peeler Crist and updated in 2010 by Far Western. The original site record described it as a scatter of ceramics, glass, brick, construction materials, and a possible septic tank. A site revisit conducted in 2010 did not locate the artifacts nor the septic tank but did identify a previously described pipe and wood-covered hole. Disturbances noted in the 2010 revisit included overgrown vegetation, animal grazing, and modern use of the area, reflected by the construction of a cement water well and pump. This site has not been previously evaluated for NRHP/CRHR eligibility.

P-48-000128

P-48-000128 is a historic homestead first recorded in 1980 by Maniery et al. based on ethnographic accounts. Archaeological evidence of the homestead consisted of three ceramic fragments, square nails, and burned wooden boards. The site was revisited by Adrian Whitaker in 2010, and no elements of the site were located. Disturbances consisted of recent soil disking associated with mechanical agricultural land management practices. This site has not been previously evaluated for NRHP/CRHR eligibility.

P-48-000140

P-48-000140 was initially recorded in 1980 as a homesite with several features, including a possible well, a pit area with wooden structural remains, and historic artifacts. The site was revisited by Far Western in 2010, and only the pepper trees documented in 1980 were able to be located. The 2010 revisit indicated that bulldozers and other excavation activities had heavily modified the site's surface to create a recreational off-road motorcycle course. This site has not been previously evaluated for NRHP/CRHR eligibility.

P-48-000981

P-48-000981 includes Grizzly Island Road, Collinsville Road, and Chadbourne Road. A portion of Collinsville Road passes through the western edge of the Proposed API/APE. The collection of roads supported the transportation of goods to permanent populations in the marshlands, made possible by reclamation projects during the early twentieth century. Collinsville Road is a regularly maintained county road. A 2013 evaluation by Cheryl Brookshear recommended that P-48-000981 was not eligible for inclusion in the NRHP, CRHR, or for local designation.

Table 4-3. Previously Recorded Cultural Resources within the Proposed API/APE

| Site No. | Resource Name | Age | Description | Company/Agency | Year |
|-------------|--|----------|---|---|------|
| P-07-002956 | Contra Costa-Moraga/Pittsburg-Tesla PG&E Electrical Transmission Lines | Historic | Two 230 kV PG&E transmission lines. | Garcia & Associates Historic Research Associates | 2008 |
| | | | | Historic Research Associates | 2017 |
| P-48-000124 | 1H | Historic | A barn with a small orchard, domestic and structural refuse, possible well, and agricultural equipment. | M. Crist, J. Brady, R. Goode | 1980 |
| | | | | Far Western Anthropological Research Group | 2010 |
| P-48-000125 | CA-SOL-284H | Historic | Remains of water conveyance system consisting of a covered well hole and a water pipe. | M. Crist, C. Peeler | 1980 |
| | | | | Far Western Anthropological Research Group | 2010 |
| P-48-000128 | CA-SOL-287H | Historic | | G. Maniery, J. Brady, R. Goode | 1980 |

| Site No. | Resource Name | Age | Description | Company/Agency | Year |
|-------------|---|----------|---|--|------|
| | | | Possible homesite, no artifactual evidence remains. | Far Western Anthropological Research Group | 2010 |
| P-48-000140 | #65H | Historic | Possible homesite location with pepper trees. | G. Maniery, K. Gebhardt, R. Ambro, | 1980 |
| | | | | Far Western Anthropological Research Group | 2010 |
| P-48-000981 | Grizzly Island Road, Collinsville Road, Chadbourne Road | Historic | Historical roads established in 1891. | JRP Historical Consulting | 2013 |

Table 4-4. Previously Recorded Cultural Resources in the 0.5-mile Buffer

| Site No. | Resource Name | Age | Description | Company/Agency | Year |
|-------------|-----------------------------|----------------|---|--|------|
| P-07-000489 | Sacramento Northern Railway | Historic | Historic railroad from Chico, CA to Oakland, CA as well as a raised embankment for the Oakland, Antioch, & Eastern Railway. | Woodward-Clyde Consultants | 1994 |
| | | | | Tremaine & Associates, Inc. | 2010 |
| | | | | Environmental Science Associates | 2019 |
| P-48-000041 | Hastings Adobe | Multicomponent | Historic Hastings Adobe structure and nearby precontact temporary habitation site. | A.B. Elsasser | 1956 |
| | | | | Solano County Historical Society | 1972 |
| P-48-000139 | CA-SOL-298H | Historic | Historic domestic refuse scatter and several pepper trees. | K. Gebhardt, C. Peeler, G. Maniery, | 1980 |
| | | | | Far Western Anthropological Research Group | 2010 |
| P-48-000416 | CA-SOL-299H | Historic | Possible homesite with a cellar hole, three depressions and a scattering of bricks. | M. Crist, R. Ambro, C. Peeler, | 1980 |
| P-48-000521 | HW-C1 | Historic | Historical ranch complex with a structure, two barns, and a coral. | Jones & Stokes Associates | 2001 |
| P-48-000949 | CW-1 Handstone Isolate | Precontact | Isolated handstone. | Far Western Anthropological Research Group | 2010 |

Table 4-5. Previous Cultural Resource Investigations within the Proposed API/APE

| Report No. | Authors | Year | Title | Company/Agency |
|-------------------|--|-------------|--|--|
| S-000595 | R.F. King | 1974 | A Report on the Status of Generally Available Data Regarding Archaeological, Ethnographic, and Historical Resources Within a Five Mile Wide Corridor Through Portions of Colusa, Yolo, Solano, and Contra Costa Counties, California | - |
| S-000848 | David A. Fredrickson | 1976 | A Summary of Knowledge of the Central and Northern California Coastal Zone and Offshore Areas, Vol. III, Socioeconomic Conditions, Chapter 7: Historical & Archaeological Resources | The Anthropology Laboratory, Sonoma State College; Winzler & Kelly Consulting Engineers |
| S-001784 | David Chavez | 1979 | Preliminary Cultural Resources Identification: San Francisco Bay Study for Corps of Engineers Projects | - |
| S-001978 | Anthony V. Aiello | 1960 | The Islands of Contra Costa | - |
| S-002458 | Neil Ramiller, Suzanne Ramiller, Roger Werner, and Suzanne Stewart | 1981 | Overview of Prehistoric Archaeology for the Northwest Region, California Archaeological Sites Survey: Del Norte, Humboldt, Mendocino, Lake, Sonoma, Napa, Marin, Contra Costa, Alameda | Northwest Regional Office, California Archaeological Sites Survey, Anthropological Studies Center, Sonoma State University |
| S-002458 | Suzanne Ramiller | 1982 | Prehistoric Archaeology Overview Northwest Region; California Archaeological Inventory, Volume I: Humboldt and Del Norte Counties | Anthropological Studies Center, Sonoma State University |
| S-002458 | Roger H. Werner | 1982 | Archaeological Overview of Mendocino and Lake Counties | Anthropological Studies Center, Sonoma State University |
| S-002458 | Suzanne Stewart | 1982 | Prehistoric Archaeology Overview Northwest Region; California Archaeological Inventory, Volume 3: Napa and Sonoma Counties | Anthropological Studies Center, Sonoma State University |
| S-002458 | Suzanne Stewart | 1982 | Archaeological Overview of Alameda, Contra Costa, and Marin Counties | Anthropological Studies Center, Sonoma State University |

| Report No. | Authors | Year | Title | Company/Agency |
|-------------------|---|-------------|---|--|
| S-002458 | Neil Ramiller | 1982 | Environmental Overview of the Northwest Region | Anthropological Studies Center, Sonoma State University |
| S-005208 | Gregory Greenway and William E. Soule | 1977 | Sacramento-San Joaquin Delta Investigations: Cultural Resources Reconnaissance | - |
| S-009462 | Teresa Ann Miller | 1977 | Identification and Recording of Prehistoric Petroglyphs in Marin and Related Bay Area Counties | San Francisco State University |
| S-009583 | David W. Mayfield | 1978 | Ecology of the Pre-Spanish San Francisco Bay Area | San Francisco State University |
| S-009795 | Thomas Lynn Jackson | 1986 | Late Prehistoric Obsidian Exchange in Central California | Stanford University |
| S-011766 | Miley Paul Holman | 1989 | Archaeological Literature Review and Field Inspection of Areas 1 through 9, Montezuma Hills, Solano County, California (letter report) | Holman & Associates |
| S-011826 | Dorothea J. Theodoratus, Mary Pyle Peters, Clinton M. Blount, Pamela J. McGuire, Richard D. Ambro, Michael Crist, Billy J. Peck, and Myrna Saxe | 1980 | Montezuma I and II Cultural Resources | Theodoratus Cultural Research; Archaeological and Environmental Services |
| S-012790 | Kenneth N. Owens | 1991 | Sacramento-San Joaquin Delta, California: Historical Resources Overview | Public History Research Institute, California State University, Sacramento |
| S-013263 | Kim J. Tremaine | 1991 | An Archaeological Inspection of the Proposed Collinsville Wind Turbine Generation Site and Transmission Line, Solano County, California | BioSystems Analysis, Inc. |

| Report No. | Authors | Year | Title | Company/Agency |
|-------------------|---|-------------|---|--|
| S-015529 | Robert L. Gearhart II, Clell L. Bond, Steven D. Hoyt, James H. Cleland, James Anderson, Pandora Snethcamp, Gary Wesson, Jack Neville, Kim Marcus, Andrew York, and Jerry Wilson | 1993 | California, Oregon, and Washington: Archaeological Resource Study | Espey, Huston & Associates, Inc.; Dames & Moore |
| S-016660 | Jeffrey B. Fentress | 1992 | Prehistoric Rock Art of Alameda and Contra Costa Counties, California | California State University, Hayward |
| S-017835 | Judy Myers Suchey | 1975 | Biological Distance of Prehistoric Central California Populations Derived from Non-Metric Traits of the Cranium | University of California, Riverside |
| S-018217 | Glenn Gmoser | 1996 | Cultural Resource Evaluations for the Caltrans District 04 Phase 2 Seismic Retrofit Program, Status Report | California Department of Transportation |
| S-020395 | Donna L. Gillette | 1998 | PCNs of the Coast Ranges of California: Religious Expression or the Result of Quarrying? | California State University, Hayward |
| S-024015 | Shahira Ashkar | 2001 | Cultural Resource Inventory Report for the Montezuma Enhancement Site, Southern Energy's Multispecies Habitat Conservation Plan for Pittsburg and Contra Costa Power Plants, Solano and Contra Costa Counties, California | Jones & Stokes |
| S-030204 | Donna L. Gillette | 2003 | The Distribution and Antiquity of the California Pecked Curvilinear Nucleated (PCN) Rock Art Tradition. | University of California, Berkeley |
| S-032596 | Randall Milliken, Jerome King, and Patricia Mikkelsen | 2006 | The Central California Ethnographic Community Distribution Model, Version 2.0, with Special Attention to the San Francisco Bay Area, Cultural Resources Inventory of Caltrans District 4 Rural Conventional Highways | Consulting in the Past; Far Western Anthropological Research Group, Inc. |
| S-033600 | Jack Meyer and Jeff Rosenthal | 2007 | Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4 | Far Western Anthropological Research Group, Inc. |

| Report No. | Authors | Year | Title | Company/Agency |
|-------------------|--|-------------|--|---|
| S-035796 | Barbra Siskin, Cassidy DeBaker, and Jennifer Lang | 2009 | Cultural Resources Investigation and Architectural Evaluation of the Pittsburg-Tesla Transmission Line, Contra Costa and Alameda Counties, California | Garcia and Associates |
| S-038991 | Adrian R. Whitaker and Philip Kaijankoski | 2010 | Archaeological Survey and Geoarchaeological Sensitivity Report for the Proposed PG&E, Collinsville Wind Project, Solano County, California | Far Western Anthropological Research Group, Inc. |
| S-049780 | Brian F. Byrd, Adrian R. Whitaker, Patricia J. Mikkelsen, and Jeffrey S. Rosenthal | 2017 | San Francisco Bay-Delta Regional Context and Research Design for Native American Archaeological Resources, Caltrans District 4 | California Department of Transportation, District 4 |
| S-049780 | Julianne Polanco | 2016 | FHWA_2016_0615_001, Caltrans District 4 Archaeological Context | California Office of Historic Preservation |
| S-049865 | Naomi Scher and Adrian R. Whitaker | 2016 | Archaeological Survey and Geoarchaeological Sensitivity Report for the Proposed Solano Phase 4 Wind Project, Solano County, California | Far Western Anthropological Research Group, Inc. |
| S-051501 | Lucian Schrader III | 2016 | Cultural Resources Constraints Report, Pittsburg-Eastshore-San Mateo-Tassajara-San Ramon-Moraga 230 kV Transmission Line ROW Vegetation Management, PM Number: 8099163 | Blue Rock Services, Inc |

Table 4-6. Previous Cultural Resource Investigations in 0.5-mile Buffer Around the Proposed API/APE

| Report No. | Authors | Year | Title | Company/Agency |
|-------------------|-------------------|-------------|---|----------------------------|
| S-007647 | - | 1985 | Cultural Resource Investigation of the Proposed Pittsburg Marina Expansion Project. | Woodward-Clyde Consultants |
| S-009095 | - | 1985 | Historic Resources Testing Program at the Proposed Pittsburg Marina Expansion Project | Woodward-Clyde Consultants |
| S-010481 | Miley Paul Holman | 1987 | Archaeological Field Inspection of the Montezuma Hills Proposed Wind Farm Area, Solano County, California (letter report) | Holman & Associates |

| Report No. | Authors | Year | Title | Company/Agency |
|-------------------|---------------------------------|-------------|---|--|
| S-016522 | - | 1993 | Archaeological Survey Report, Montezuma Wetlands Project, Solano County, California | Williams Self Associates |
| S-016522 | - | 2001 | Supplementary Archaeological Survey of the Montezuma Wetlands Project | Williams Self Associates |
| S-017893 | David Chavez | 1995 | Archaeological Resources Investigation for the Pittsburg Conveyance System Improvements Project (87.9191), Contra Costa County, California | David Chavez & Associates |
| S-018352 | - | 1976 | East/Central Contra Costa County Wastewater Management Plan, California: Cultural Resources Survey | Arthur D. Little, Inc. |
| S-018352 | Adam Cvijanovic and Larry Aull | 1976 | Assessment of Historical and Architectural Resources | American Institute of Architects |
| S-018352 | Colin I. Busby | 1976 | Assessment of Archaeological Resources: East/Central Contra Costa County Wastewater Management Plan | University of California, Berkeley, Department of Anthropology |
| S-018440 | G. James West and Patrick Welch | 1996 | Class II Archaeological Survey of the Contra Costa Canal, Contra Costa County, California | U.S. Bureau of Reclamation, Mid-Pacific Region |
| S-024272 | - | 2001 | Cultural Resources Inventory Report for High Winds, LLC's, Proposed Wind Turbine Project in the Montezuma Hills of Solano County, California | Jones & Stokes |
| S-024322 | Sally Morgan and Bruce Bachand | 1998 | Pittsburg District Energy Facility, Cultural Resources Technical Report (Supplement to Appendix K) | Woodward-Clyde Consultants |
| S-024986 | - | 2000 | Cultural Resources Assessment, PG&E Proposed Tri-Valley 2002 Electric Power Capacity Increase Project | Basin Research Associates, Inc. |
| S-030579 | Colin I. Busby | 2004 | Cultural Resources Report, Delta Energy Center Site (DEC) and Associated Linears, Cities of Pittsburg and Antioch, Contra Costa County, California, California Energy Commission (CEC), Project 98-AFC-3C | Basin Research Associates, Inc. |

| Report No. | Authors | Year | Title | Company/Agency |
|-------------------|---|-------------|--|--------------------------------|
| S-031962 | Christopher C. Corey and Nancy E. Sikes | 2006 | Cultural Resources Survey for the Proposed Van Sickle Island Levee Reinforcement Project, Solano County, California | SWCA Environmental Consultants |
| S-034161 | Miley Paul Holman | 2007 | Cultural Resources Study of the 8th Street Flood Improvement Project, Pittsburg, Contra Costa County, California (letter report) | Holman & Associates |
| S-044229 | Allen G. Pastron and Michelle Touton Staley | 2013 | Phase I Cultural Resources Evaluation for the Pittsburg Forcemain Improvements Project, Contra Costa County, California | Archeo-Tec |
| S-049478 | Eileen Barrow | 2017 | Cultural Resources Study for the Delta Diablo Pump Station Facilities Repair Project, Project Numbers 17128, 17129, 17130, 17131, and 17132, Contra Costa County, California | Tom Origer & Associates |
| S-051692 | Heather L. MacInnes | 2009 | Cultural Resources Assessment, Chipps Island Tidal Wetland Restoration Project | Parus Consulting, Inc. |

Archival Research Results

Historical maps of the Proposed API/APE were examined to identify the potential for historic period (45 years and older) cultural resources that may be impacted by Proposed Project activities.

The earliest maps of the Proposed API/APE come from the General Land Office (GLO) survey maps dating back to 1870 (GLO 1870). An 1870 BLM GLO map shows the southernmost extent of the Proposed API/APE falling within the Mexican Land Grant territory of Rancho Los Medanos. No buildings, structures, or other features that would lie within the Proposed API/APE are depicted on the map. A portion of the Proposed API/APE north of Suisun Bay is depicted only as a salt marsh.

The Proposed API/APE is depicted on the Historical Atlas Map of Solano County, 1878, by Thompson and West (Figure 4-1; Thompson and West 1878). This map shows several structures in the Proposed API/APE that were part of the small town of Collinsville (whose name was recently changed from Newport). The area between the river and the town appears to have been marshland with no development. Immediately west of the Proposed API/APE at the edge of the river is Collins Wharf, which appears to have been connected to the town by a road through the marsh. The area was sparsely populated during this period. This map depicts ten or more structures, while the northern end of town had what appears to be a couple of residences and a schoolhouse, bordering a tract owned by C. H. Rice. This expansion seems more in keeping with a working salmon cannery, hotels, and stores in the town. The Collinsville Road can be seen on this early map, which would later become a recognized historical site (P-48-000981) within the Proposed API/APE.

A map of Solano County published in 1890 by E. N. Eager (Figure 4-2; Eager 1890) shows that there had been numerous land ownership changes in the Proposed API/APE, as S. M. Marshall, C.K. Marshall, and John Kirge at this time owned most of the land within the Proposed API/APE, south from the Proposed API/APE's northern boundary to the water's edge in the salt marshes. L. P. Marshall, a landowner immediately to the east, and two sons occupied the abandoned Hastings Adobe in 1855 (P-48-000041; Young 1971). Lansford W. Hastings built the adobe house in 1844 at the junction of the Sacramento River, San Joaquin River, and Suisun Bay and planned a town that he named Montezuma City. After California was ceded to the United States in the aftermath of the Mexican American War, he abandoned the site. The Marshalls repaired and improved the dwelling with a frame structure around the adobe. The Marshall family lived here until 1908, when they sold the building to the S. O. Stratton family. The adobe was nominated to the NRPH in 1972. It may be one of these structures depicted on the map.

The Honker Bay and Collinsville USGS 7.5-minute topographic quadrangle map of 1918 (Figure 4-3 and Figure 4-4; USGS 1918) shows that the town of Collinsville, west of the Proposed API/APE, was scaled down during this period, with a few buildings depicted along either side of the main road and the river's edge to the east of the main road. Montezuma Landing with a pier and a few structures is depicted within the Proposed API/APE. Northwest of the landing, within the Proposed API/APE, at least two structures are depicted, including one along the main road and one north of the road.

The Honker Bay and Antioch North USGS 7.5-minute topographic quadrangle map of 1953 (USGS 1953) shows the Proposed API/APE before W. Trimble Road was constructed. To the west of the Proposed API/APE, Collinsville had grown to include over 20 structures along the main road and the river's edge. There was still marshland immediately east of town, where radio towers had been installed. The Proposed API/APE was undeveloped with a finger of water jutting inland from the river. This is called Marshall's Cut. To the north of the cut, two structures are depicted as well as scattered

Cultural Resource Assessment Report for The Collinsville 500/230KV Substation Project

structures farther to the north. These appear in the exact location as structures on the 1918 topographic map discussed above.

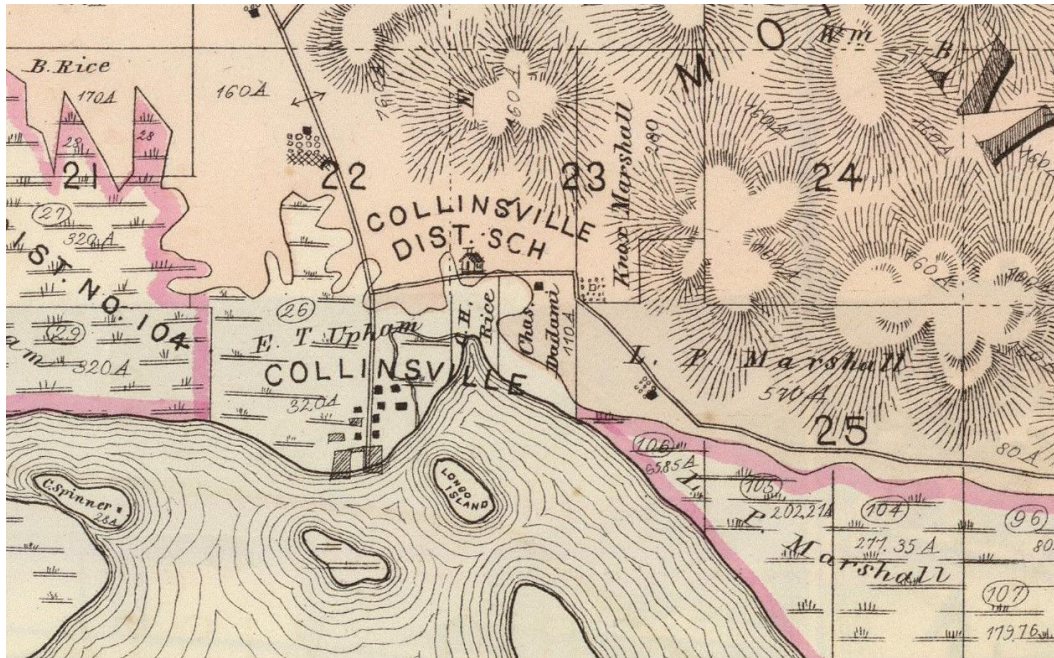


Figure 4-1. 1876 map showing land ownership (E. T. Upham, C. H. Rice, and Charles Dadami) within the Proposed API/APE (Thompson and West 1876).



Figure 4-2. 1890 map showing land ownership (M. Dawson and J.W. Briggs) within the Proposed API/APE (E. N. Eager 1890).

The Honker Bay topographic map from 1953 also depicts an offshoot of the Atchison, Topeka, & Santa Fe Railway (AT&SF), intersecting the southern portion of the Proposed API/APE to the west of the Pittsburg Substation. This unnamed railroad offshoot originates from the AT&SF and heads north, intersecting the Sacramento Northern Railway (P-07-000489), and then continues north into the Pittsburg Substation, where it appears to end just before reaching the banks of the Sacramento River. The railway offshoot first appeared on topographic maps in 1953 (USGS 1953), can be seen again on USGS Topographic maps from 1993 (USGS 1993), and disappears from maps by 2012 (USGS 2012).

Furthermore, it was also at this time in 1953 that the Contra Costa-Moraga/Pittsburg-Tesla PG&E Electrical Transmission Lines (P-07-002956) first appeared on archival maps (USGS 1953). These two transmission lines that span 31 mi, beginning in Antioch, CA and ending at the Pittsburg Substation. This transmission line played a crucial role in the creation of PG&E and the development of a reliable supply of electrical power throughout Contra Costa and Alameda counties during the early to mid-twentieth century (Supernowicz 2017).

The Antioch North USGS 7.5-minute topographic quadrangle map of 1978 (Figure 4-5; USGS 1978) shows that the overall Proposed API/APE was slightly more developed with new roads, such as Stratton Lane and Talbert Lane. To the west of the Proposed API/APE, Collinsville appears to have remained relatively unchanged, with structures along the main road (Collinsville Road) and the river's edge. The land around town appears to have been drained, and dryland was created around the town, especially to the east of town where radio towers still stand. To the north of Marshall's Cut, only a few structures remain, and only one remains farther to the north.

A review of historical aerial photographs dating from 1937–1980 was also completed as part of the literature review. The aerial photograph from 1937 (Figure 4-6; UCSB 1937) shows that the land between the Proposed API/APE and Collinsville to the west had mostly dried up. The radio towers do not appear to have been constructed by this time. A few structures just west of the Proposed API/APE are most likely related to agriculture, as most of the area in and around the Proposed API/APE appears to be agricultural fields and grazing lands with very little development. Marshall's Cut is a feature of the Proposed API/APE, and there appears to have been some development at its northern end. A couple of scattered structures appear to the north of this area.

The 1957 aerial photograph (Figure 4-7; UCSB 1957) shows that very little change had occurred in the intervening decades. The pad for the radio tower can now be seen to the west of the Proposed API/APE, just south of what will later become Stratton Road. A couple of new structures had been built between the radio tower and the Proposed API/APE on the northern side of this road. There appears to have been substantial construction north of Collinsville on the western side of the waterway. By 1957, the Proposed API/APE itself had undergone very little change since 1937. The same development at the northern end of Marshall's Cut and the two scattered structures to the north can be seen. It was also at this time that historic aerial images show the development of the Pittsburg Substation, intersecting the southern extent of the Proposed API/APE (NETR 2023).

The 1970 aerial photograph (Figure 4-8; UCSB 1970) again shows that little change had occurred in the intervening decades. Some new construction appears just west of the Proposed API/APE at the southern end of the small cut along the waterfront. The land within the Proposed API/APE itself remained the same. The same development at the northern end of Marshall's Cut and the two scattered structures to the north can be seen.

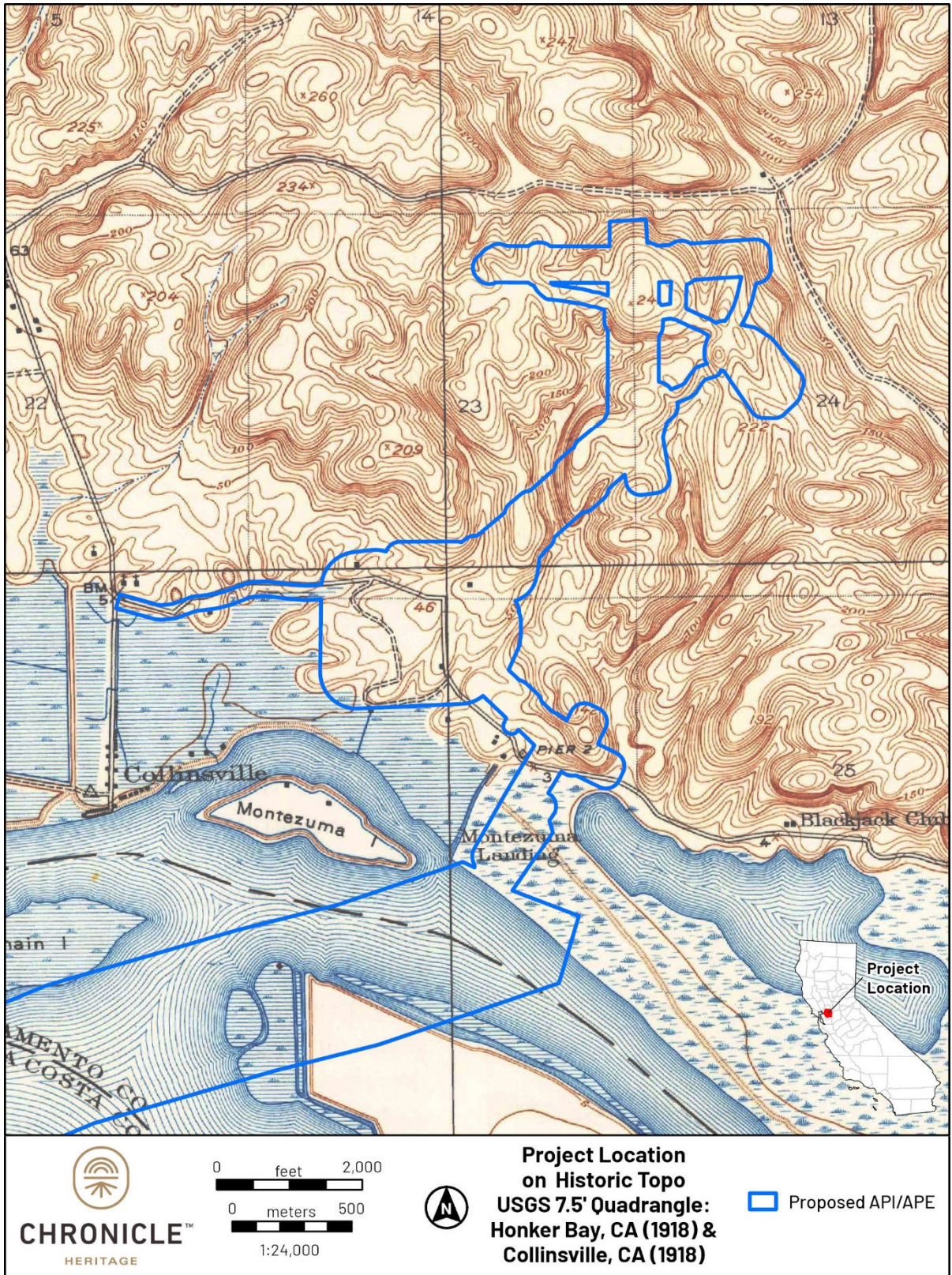


Figure 4-3. Historic Topographic map of the Proposed API/APE (Honker Bay, CA 1918; Collinsville, CA 1918).

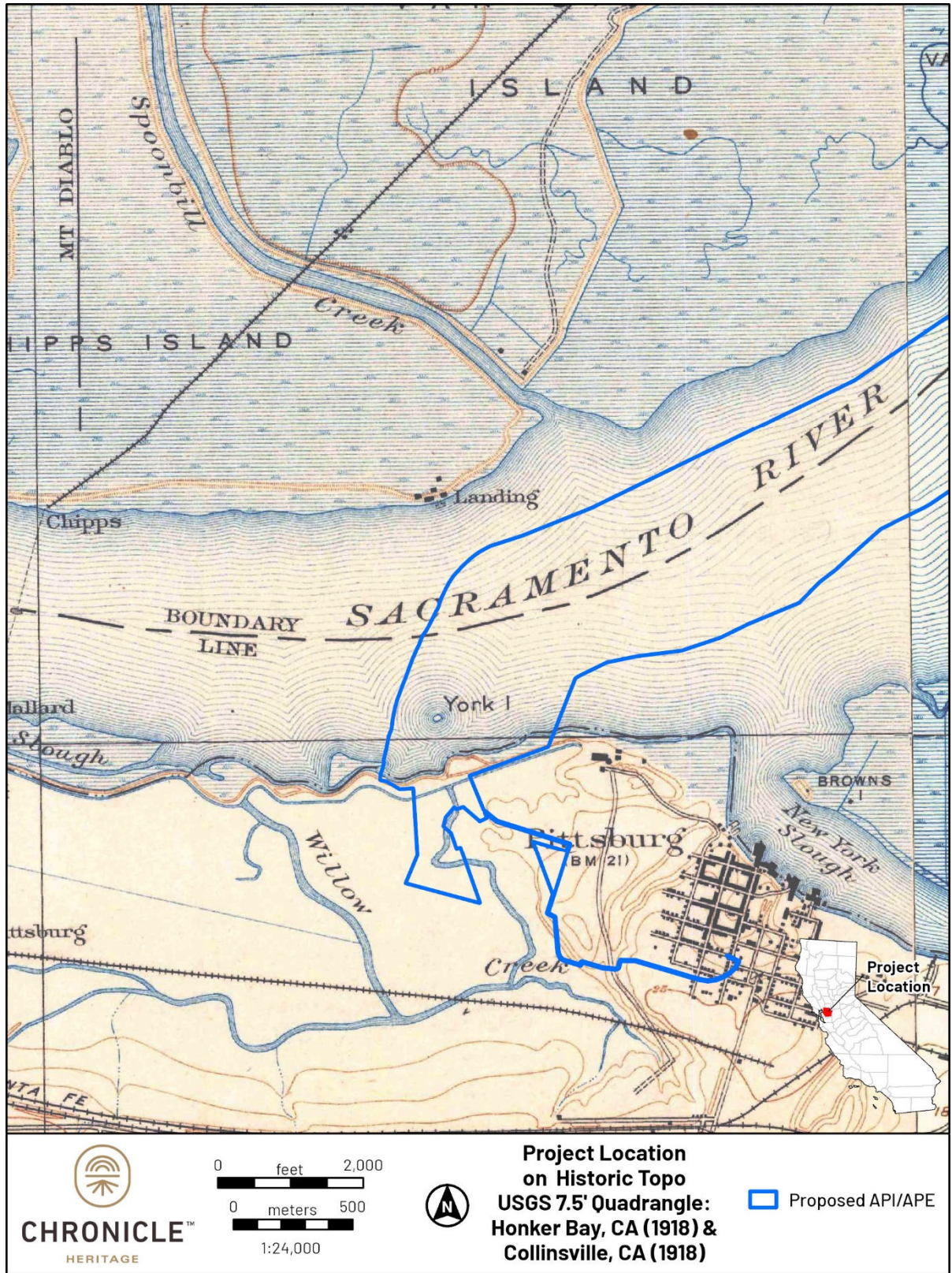


Figure 4-4. Historic Topographic map of the Proposed API/APE (Honker Bay, CA 1918; Collinsville, CA 1918).

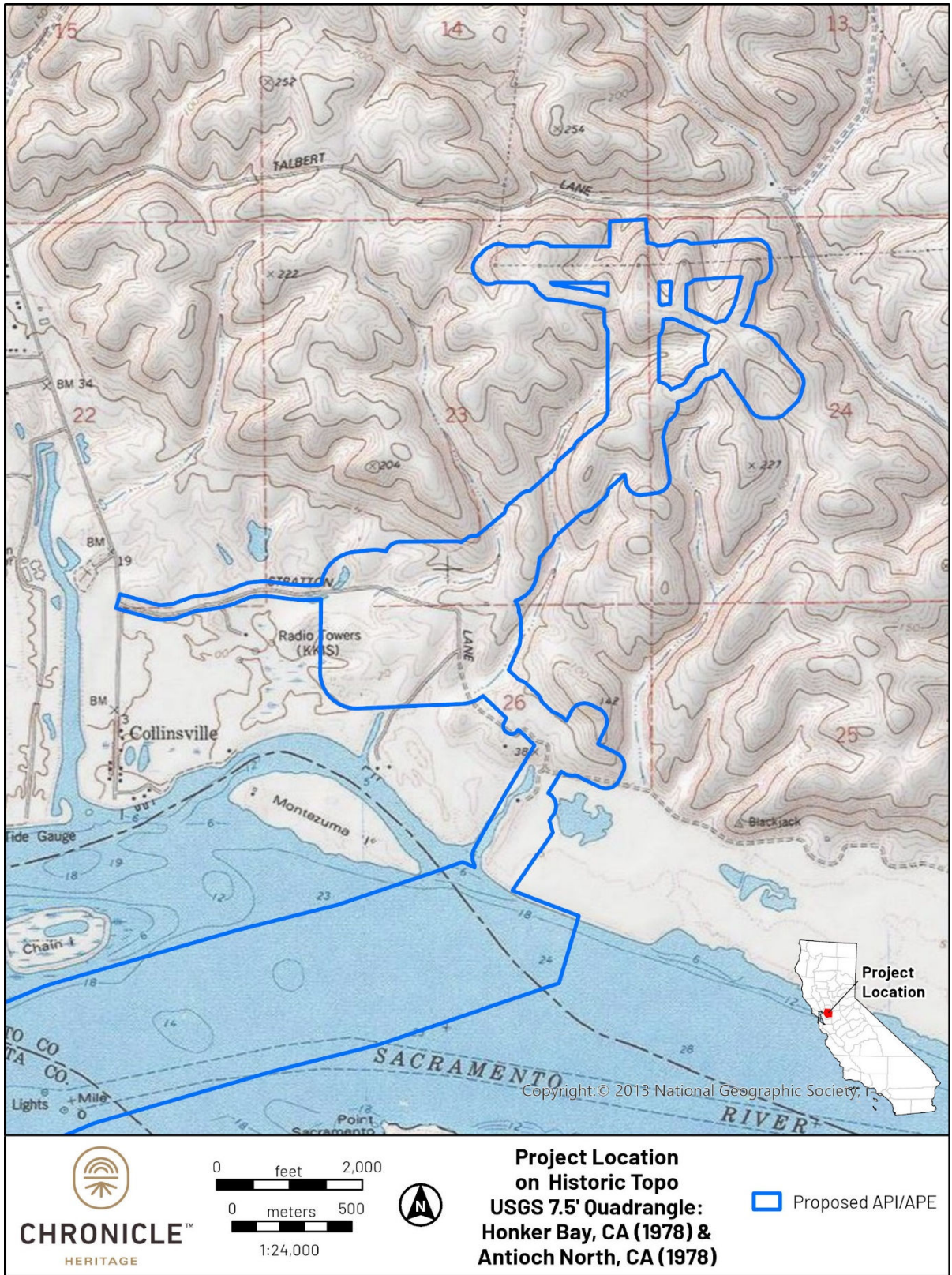


Figure 4-5. Topographic map from 1978 depicting the northern portion of the Proposed API/APE (USGS 1978).

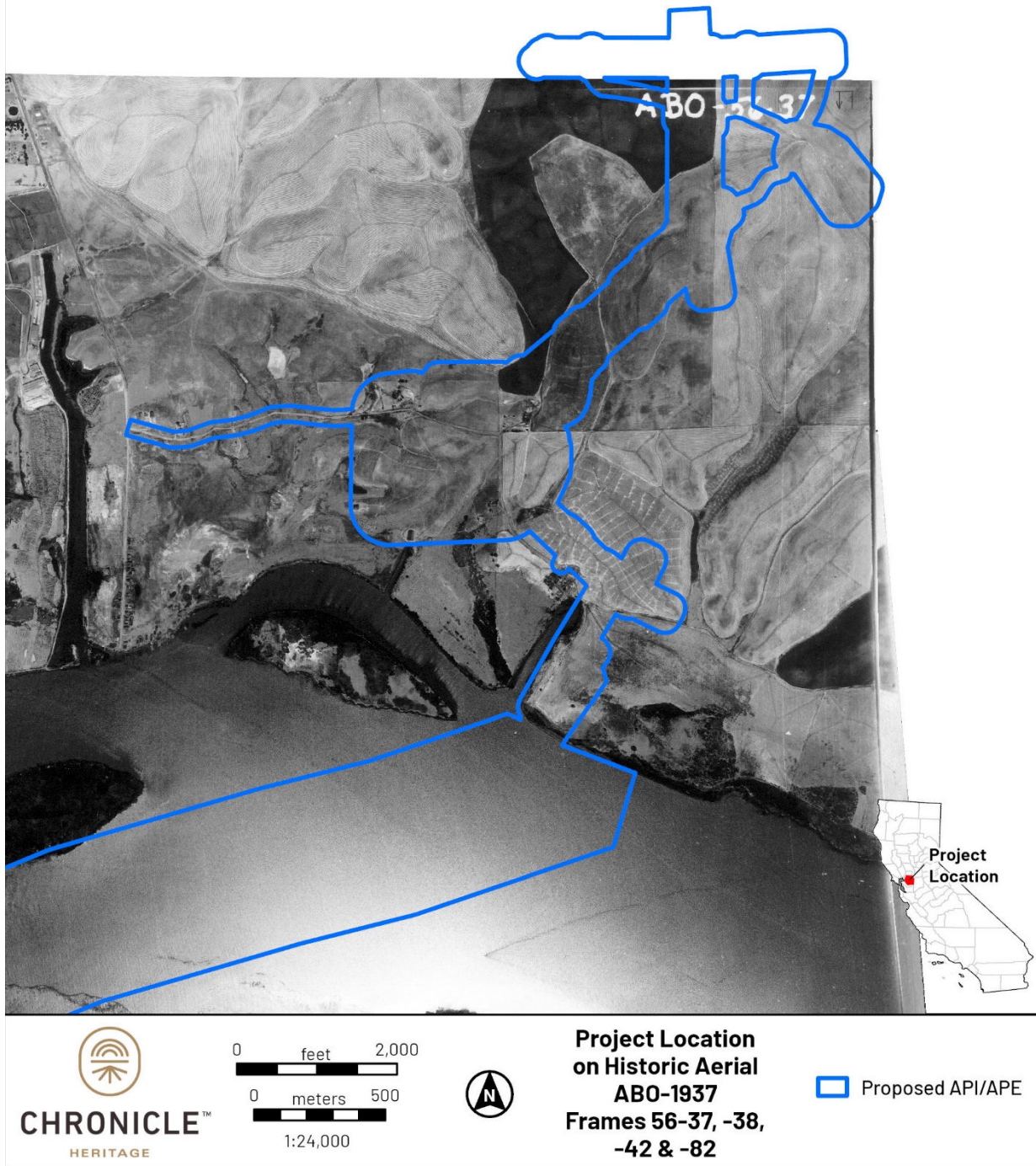


Figure 4-6. Historic aerial imagery of the northern extent of the Proposed API/APE (UCSB 1937).

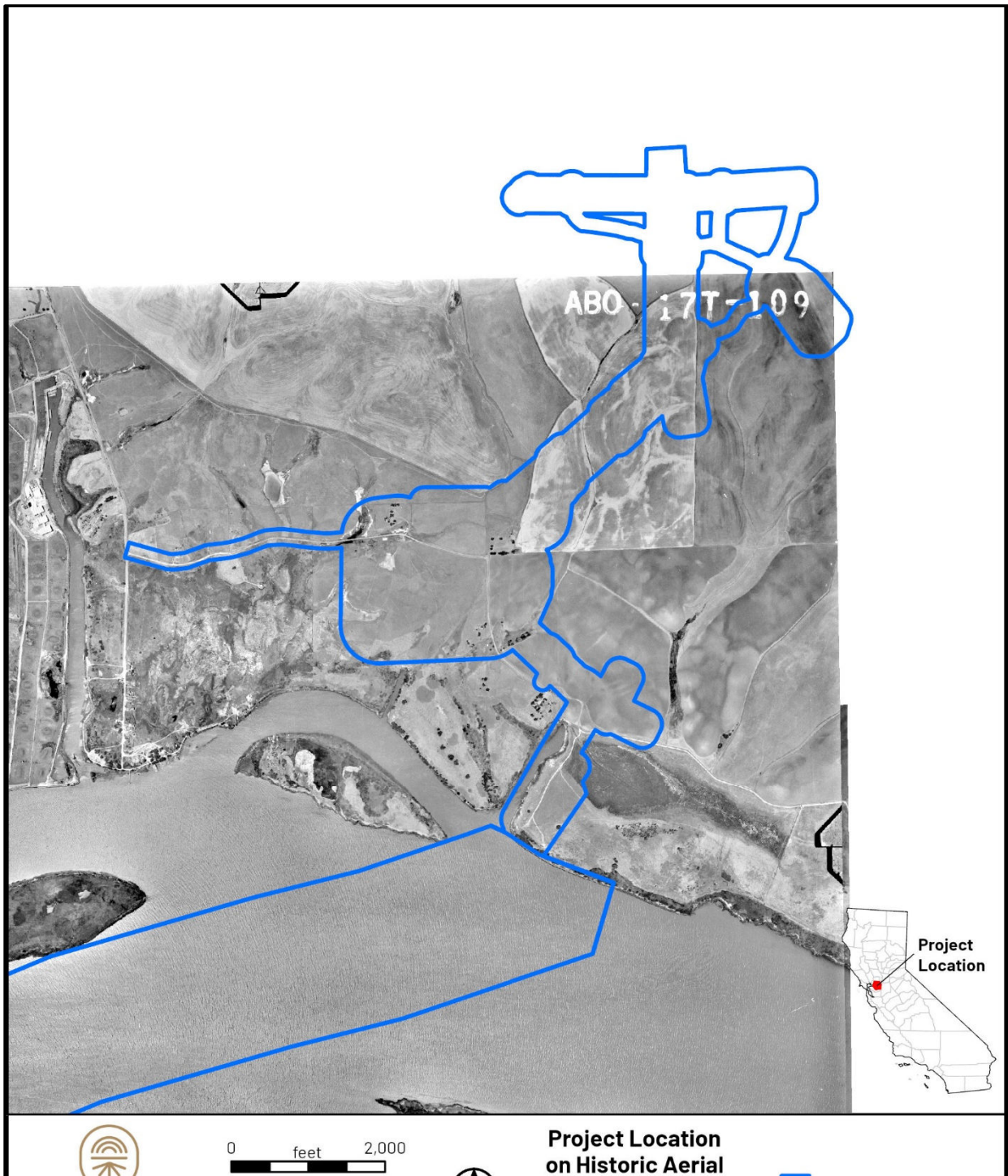


Figure 4-7. Historic aerial imagery of the northern extent of the Proposed API/APE (UCSB 1957).

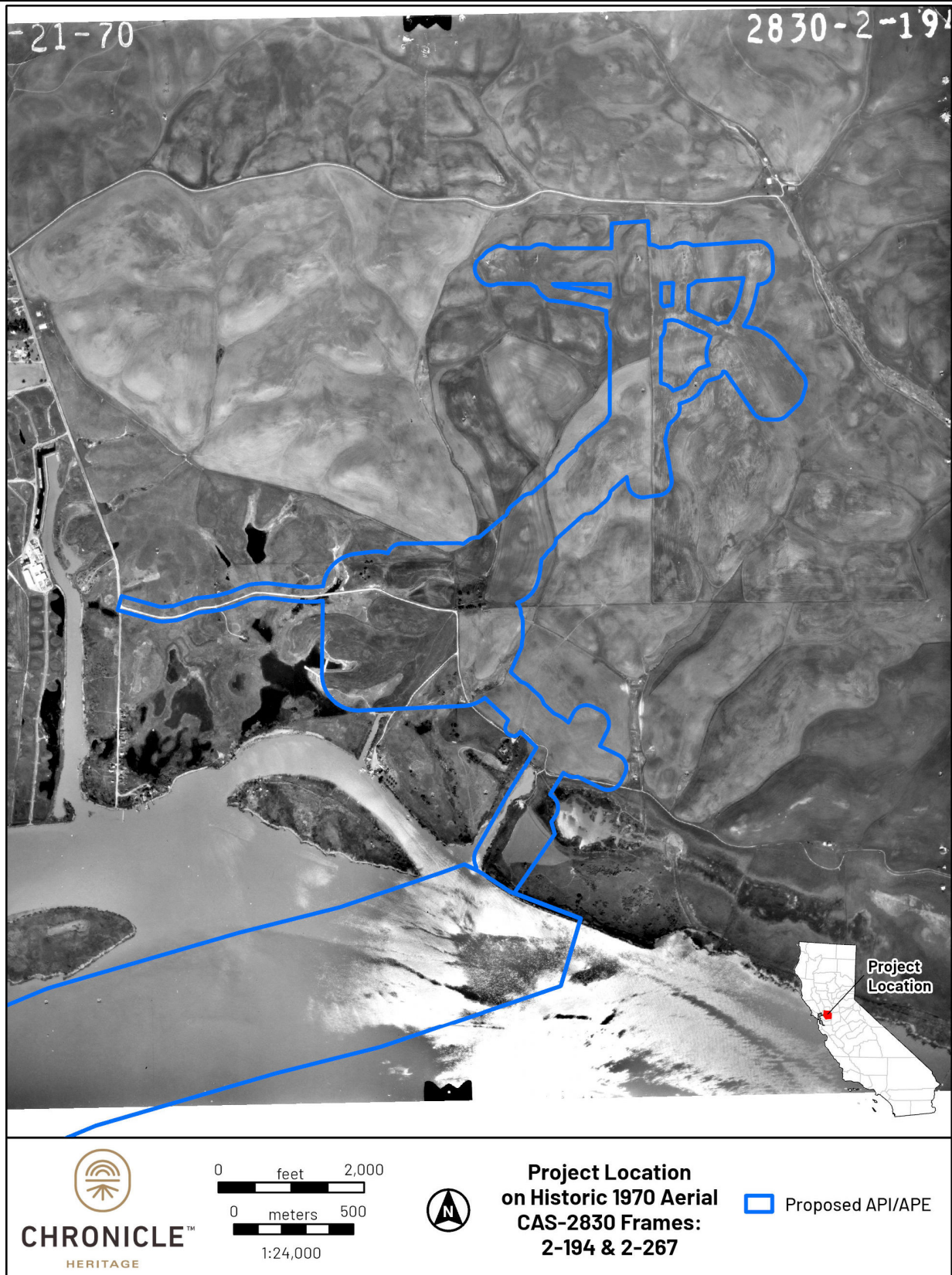


Figure 4-8. Aerial image showing limited development within the Proposed API/APE (in blue) and the vicinity (UCSB 1970).

The study of historical maps and aerial photographs has shown that very little change to the area has occurred from its initial development in the mid-nineteenth century until very recently. The small town of Collinsville never expanded beyond a few dozen buildings. The entire area remained mainly agricultural or unused lands (Figure 4-8). The agrarian use does not appear to have been more than a few farms or ranches scattered about. There appears to be some connection to the river for either small-scale river transport or fishing. The southern extent of the Proposed API/APE was undeveloped prior to the construction of the Pittsburg Substation. The Pittsburg Substation first appears on historic maps in 1953 (USGS 1953) and can be seen on aerial images dating back to 1957 (NETR 2023). The entirety of the Proposed API/APE remained unchanged for most of the twentieth century.

Native American Heritage Commission Outreach

Chronicle Heritage contacted the Native American Heritage Commission (NAHC) on May 5, 2023, to request a search of the Proposed API/APE in the Sacred Lands File (SLF). The NAHC responded on June 1, 2023, indicating that SLF search results were negative, and provided a list of 23 contacts, representing eight tribes with traditional affiliations to the area to contact for any additional findings.

On June 26, 2023, Chronicle Heritage sent letters to 23 tribal contacts to notify representatives of Proposed Project plans and to request any information of known Native American cultural resources in the Proposed API/APE or the vicinity. Chronicle Heritage received two responses: from Yvonne Perkins, Tribal Historic Preservation Officer (THPO) and Cultural Resource Chairperson of the Yocha Dehe Wintun Nation, and from Irene Zwierlein, Chairperson of the Mutsun Tribal Band of Mission San Juan Bautista.

On August 1, 2023, THPO Yvonne Perkins responded to Chronicle Heritage's outreach stating that the Cultural Resources Department had reviewed the Proposed Project information and concluded that the Proposed API/APE is within the aboriginal territories of the Yocha Dehe Wintun Nation. Perkins maintained that the Wintun Nation has a cultural interest and authority in the Proposed API/APE and requested formal consultation between the lead agency of the Proposed Project and the Wintun Cultural Resources Department (Perkins 2023).

A response from Irene Zwierlein contained recommendations from the A.M.T.B Inc. and Amah Mutsun Tribal Band of San Juan Bautista if any cultural or historic sensitivity is encountered within 1 mile of the Proposed API/APE. In the event that any cultural sensitivity is encountered in the records search results, Zwierlein's recommendations include cultural sensitivity training for all individuals and personnel who will be moving any earth, that a qualified California-trained archaeological monitor be present during any earth movement, and that a qualified Native American monitor be present during any earth movement.

Native American outreach conducted for the Proposed Project is solely a request for information regarding cultural resources within and in the vicinity of the Proposed API/APE. Outreach letters, follow-up calls, and emails do not constitute formal consultation and are not meant to replace consultation by the Lead Agencies under Section 106 of NHPA or Assembly Bill 52. Attachment C includes copies of all NAHC correspondence.

Archaeological Sensitivity

Results of the records search and archival research suggest that portions of the Proposed API/APE may be archaeologically sensitive.

Chronicle Heritage estimated the subsurface cultural sensitivity of the Proposed API/APE by analyzing local sedimentological, stratigraphical, and geomorphological information contained in academic and regulatory reports in relation to the distribution of recorded cultural resources in the region. Additionally, geologic maps and soil reports provided the units to be expected at depth with the Proposed API/APE.

Geologically, surficial units in the southern end of the Proposed API/APE near Pittsburg are mapped as artificial fill and Pleistocene alluvial fan deposits (Helley and Graymer 1998). Surficial units on the northern bank of the Sacramento River near Collinsville are mapped as Holocene peaty muck deposits, and the low-lying hills at the northern edge of the Proposed API/APE are mapped as Quaternary undifferentiated gravels (Helley and Graymer 1998). Soils within the Proposed API/APE are clays and clay loams in the floodplain at the southern edge of the Proposed Project, silt clay loams on the northern bank of the Sacramento River, and clays in the Montezuma Hills at the northern edge of the Proposed API/APE (USDA 2023). Although Montezuma Hills clays are somewhat shallow with a depth to bedrock of approximately 102 centimeters (USDA 2023), the remaining soils within the Proposed API/APE are deep, mapped with a depth to bedrock of at least 2 meters (m) (USDA 2023). The Montezuma Hills clays have an overall low likelihood to yield buried cultural materials because they are relatively shallow and are mostly situated on hillslopes. However, soils within small drainages of the Montezuma Hills at the northern end of the Proposed API/APE have a moderate potential to contain buried cultural resources due to their position in a flat depositional setting near an ephemeral water source. Surface exposures within the Montezuma Hills clays and gravels are likely to contain historic resources given the presence of several previously recorded historic sites in the vicinity of Collinsville (see Section 3.1).

Clay loams in marshland on the north bank of the Sacramento River have a high potential to yield buried cultural deposits due to their depth of at least 2 m, their flat setting next to a significant water body, and ethnographic (Kroeber 1932) and archaeological (Arnold and Walsh 2010) evidence for sustained indigenous occupation of Sacramento–San Joaquin River Delta marshlands. As with soils in the Montezuma Hills, marshland loams are likely to contain historic resources given their proximity to previously recorded historic sites in the vicinity of Collinsville. Artificial fill and Pleistocene alluvial fan deposits in the southernmost section of the Proposed API/APE are unlikely to contain buried precontact materials due to heavy landscape modification associated with the historic development of Pittsburg and Pleistocene-aged material that may predate human occupation of the area.

Supplemental Cultural Resource Inventory

A supplemental cultural records search was conducted by ASM Affiliates (ASM) in February 2025. This records search covered two portions of the original API/APE in Solano County and one portion of the original API/APE in Contra Costa County that were surveyed by Chronicle Heritage in 2024. These areas were not covered in the original records search due to modifications to the API/APE following Chronicle Heritage's records search request from June 2023. This records search identified one unevaluated historic-era site partially within the API/APE and 10 historic-era sites within 0.5 mile of the API/APE. The results of this records search is described in more detail in Attachment H.

Terrestrial Survey

Pedestrian Archaeological Survey Methods

Chronicle Heritage conducted an intensive pedestrian archaeological survey of terrestrial portions of the Proposed API/APE under the direction of Chronicle Heritage Senior Archaeologist Max van Rensselaer, MPS, RPA. Max van Rensselaer and Chronicle Heritage Associate Archaeologist Ashley Garrett served as Field Directors during the field effort with a crew that included Evan Tudor Elliott, Thea De Armond, Rachael Irwin, Camille Weiskopf, and Gregg Harmon.

The entirety of the terrestrial Proposed API/APE was surveyed in pedestrian transects no more than 15 m apart, with the exception of the proposed LSPGC Telecommunications Line route. Because the proposed LSPGC Telecommunications Line is limited to the public right-of-way, and construction will be temporary in nature, the proposed LSPGC Telecommunications Line route was not surveyed for cultural resources. Digital photographs were taken for use in documentation and reporting. Photographs include general views of the Proposed API/APE and topography, vegetation density, and other relevant images. An ArcGIS Collector receiver with submeter accuracy (± 50 centimeters) was used to conduct the archaeological survey within the bounds of the Proposed API/APE, to identify the extent of previously recorded cultural resources, and to document artifacts and features within archaeological sites.

The Proposed API/APE was examined for the presence of historic or precontact period archaeological site indicators. Historic period site indicators include foundations, fence lines, ditches, standing buildings, objects, or structures such as sheds or concentrations of materials at least 45 years old, such as domestic refuse (e.g., glass bottles, ceramics, toys, buttons, and leather shoes) or refuse from other pursuits such as agriculture (e.g., metal tanks, farm machinery parts, and horseshoes) or structural materials (e.g., nails, glass window panes, corrugated metal, wood posts or planks, metal pipes and fittings, etc.). Precontact site indicators include areas of darker soil with concentrations of ash, charcoal, faunal bone fragments (burned or unburned), shell, flaked stone, ground stone, and human bone.

The pedestrian survey covered approximately 409 acres. Due to issues gaining access to the PG&E Pittsburg Substation and surrounding area, only the portion of the Proposed API/APE north of the Sacramento River was initially surveyed. The southern extent of the terrestrial Proposed API/APE, south of the Sacramento River, was surveyed on December 19, 2023, after access to that portion of the Proposed API/APE was granted.

The built environment survey of the southern portion of the Proposed API/APE was conducted September 19 to September 20, 2024. The area, methods, and results of the built environment survey are detailed in a stand-alone Built Environment Survey and Assessment Report in Attachment F.

Pedestrian Survey of Northern Portion of Terrestrial Proposed API/APE

The pedestrian survey of the northern portion of the Proposed API/APE was conducted August 21 to August 22, 2023, October 16– October 18, 2023, and again on June 28, 2024. Extensive disturbances from road grading, construction activities, wind turbine maintenance, and agricultural activities (including both cattle ranching and hay cultivation) were observed throughout the Proposed API/APE north of the Sacramento River (Figure 6-1).

The northern extent of the Proposed API/APE consisted of high rolling hills with varying slopes that ranged from 10 to 20 percent (Figure 6-2). The southern extent of the surveyed area north of the Sacramento River had gradually sloping hills with slopes ranging from 5 to 9 percent (Figure 6-3). Ground surface visibility was poor throughout the Proposed API/APE, with 10 to 20 percent visibility due to the presence of thick vegetation and tall grasses. Vegetation consisted of low to tall grasses and weeds, including star thistle, turkey mullein, pigweed, and blindweed. In some areas, star thistle bushes were dense to the point of being impassable, and tall dried shrubs reached over 6 feet in height. In areas where the ground was visible, the surface's integrity was disturbed by deep imprints and crevices from extensive cattle trampling.



Figure 6-1 . Proposed Project overview, facing southwest.



Figure 6-2. Proposed Project overview, facing north.



Figure 6-3. Proposed Project overview, facing southeast.

In areas where soil visibility was limited, the survey crew employed periodic boot scrapes to enhance ground visibility. Soils within the northern extent of the Proposed API/APE consisted of a light to dark brown clay loam known as the Diablo-Ayer complex, formed of well-drained residuum weathered from weakly consolidated sediments (CSRL 2023). Soils within the southernmost extent of the Proposed API/APE consisted of a tidally influenced silty loam known as the Valdez-Columbia complex, made of a poorly drained fine-silty alluvium derived from igneous, metamorphic, and sedimentary rock (CSRL 2023). Several recently graded roads intersected the Proposed API/APE, which revealed soils of a light brown silty loam with subangular rock inclusions.

Nine previously recorded resources within or immediately adjacent to the Proposed API/APE were revisited (P-48-000041, P-48-000124, P-48-000125, P-48-000128, P-48-000139, P-48-000140, P-48-000416, P-48-000521, and P-48-000981). Of the nine previously recorded resources, eight were relocated (P-48-000041, P-48-000124, P-48-000125, P-48-000139, P-48-000140, P-48-000416, P-48-000521, and P-48-000981). One resource (P-48-000128) could not be located, except for a single piece of window glass, due to disturbances associated with agricultural activity. Five new resources were identified (AG-001, JN-001, JN-002, Stratton Lane, and JN-004). The nine previously recorded resources were updated using Department of Parks and Recreation (DPR) 523 forms. The five newly identified resources were recorded on DPR 523 forms. All of the DPR 523 forms can be found in Attachment D. A confidential map of the survey results of the Northern Portion of the Terrestrial Proposed API/APE is Figure 1 in Attachment E.

Pedestrian Survey of Southern Portion of Terrestrial Proposed API/APE

The southern extent of the Proposed API/APE, south of the Sacramento River, was surveyed on December 19, 2023, by Associate Archaeologists Ashley Garrett and Josh Noyer. The survey area was in a developed, industrial area of the Pittsburg Substation on the south bank of the Sacramento River. There were multiple outbuildings and various modern infrastructure features throughout the survey area. The northern portion of the survey area's ground surface was a mixture of paved asphalt and imported ballast gravel. The southern portion of the survey area was largely unpaved with sandy gravelly soils and weedy brush vegetation. Areas with unpaved exposed soils were examined for surface cultural material.

Multiple double lane asphalt access roads travel through the survey area. Two mostly parallel access roads branch to the north through the area off an east-west access road that forms the southern boundary. The northeast edge of the survey area is bound by an industrial facility and immediately south of this facility, the remaining eastern edge is bound by fencing for a power substation. The northern edge of the survey area is bound by a chain-link fence and the south bank of the Sacramento River. The western portion of the survey area is crossed by multiple north-south running chain-link fences that run along both margins of the western most access road.

Multiple power transmission lines connecting with the substation adjacent to the east, cross through the central and southern portions of the survey area traveling northeast to southwest. Two of these transmission lines and associated towers were previously recorded as a historic resource (P-07-002956), these were revisited and a DPR update was prepared.

A portion of the Burlington Northern Santa Fe Railway line travels through the middle of the survey area entering in the south and traveling north-northwest before turning towards the east-northeast continuing out of the survey area. The rail is largely intact but no longer in use with several sections covered by asphalt where it crosses access roads. The railway is of historic age and a draft DPR site record (AG-002) was prepared for the section of the railway within the current survey area.

No other cultural resources were identified or recorded during the current survey.

The site P-07-002956, the Contra Costa-Moraga/Pittsburg-Tesla PG&E Electrical Transmission Lines, and AG-002 were updated and recorded using DPR 523 forms. These can be found in Attachment D. A confidential map of the survey results of the Southern Portion of the Terrestrial Proposed API/APE is Figure 2 in Attachment E.

Cultural Resource Evaluations

P-48-000041

P-48-000041 is a multicomponent site consisting of a precontact campsite and the Hastings Adobe. The Hastings Adobe was originally constructed in 1846 by Lansford W. Hastings, a representative of the Mormon Church, who was tasked with establishing a Mormon settlement on the West Coast. The building was originally constructed with sun-dried bricks made from native clay adobe and consisted of four rooms and an attic. Hastings abandoned the adobe shortly after the United States claimed the land, and the Mormon community lost interest in the settlement. In 1853, the adobe was unofficially claimed by L.P. Marshall and his two sons, who made repairs to the adobe by adding a wooden frame around the entirety of the structure. The Marshalls occupied the structure until 1908, when the S.O. Stratton family purchased it. Further repairs and maintenance were done to the structure by the Strattons until it was ultimately purchased by PG&E in 1963 (Young 1971). Mr. Stratton noted an adjacent precontact campsite where he “used to pick up arrow points” (Elsasser 1956). However, by 1956, A.B. Young noted that the campsite had been covered by sterile sandy soil and had been disturbed by modern agricultural processes (Young 1971). During the field visit, archaeologists were unable to find the prehistoric component of the site. The Hastings Adobe was evaluated for eligibility in 1971 and was nominated to the NRHP in 1972. The Hastings Adobe is approximately 145 feet outside of the Proposed API/APE. The site is adjacent to the Proposed API/APE just south of where a new access road will be constructed leading from Stratton Lane to tower 1/2 of 230 kV overhead transmission line (Figure 1 in Attachment E: Figure 1-10). The site will not be impacted directly by Proposed Project construction.

Effects Analysis

The Hastings Adobe was nominated to the NRHP in 1972 due to its local significance in representing the nineteenth-century settlement of California and an attempted establishment of a Mormon community by Langsford W. Hastings in what he called Montezuma City, which later became Collinsville. Acquired in 1853 by the Marshall family, who lived in the house for a time, the adobe was altered by placing a frame structure around the exterior of the building. The Marshalls eventually sold the land to the Stratton family in 1908, who also lived in the house for a while. The Stratton family owned the land until 1963. After suffering vandalism following the purchase of land surrounding the adobe by PG&E in 1963, a high padlocked fence was placed around the Hastings Adobe (Figure 7-1). The NRHP evaluation form completed by Wood Young in 1971 describes the Hastings Adobe’s condition as “deteriorated” and indicates restoration of the building is needed for, “perpetuation as a historic monument” (Young 1971). Although the Hastings Adobe is described as retaining its, “basic architectural form,” the integrity is, “expressly noted in the interior,” because the exterior framework and porch area were modern additions. Therefore, while significant as a local historic monument and retaining integrity of the interior architectural plan to communicate its significance, the integrity of the exterior of the Hastings Adobe has been altered and remains deteriorated.

Conclusion

P-48-000041 has been nominated to the NRHP based on its local historical significance. The exterior of the building remains in a state of deterioration, has seen multiple modern additions, and remains fenced off to prevent further vandalism. Because the Hastings Adobe is outside the Proposed Project footprint, it will not be directly affected by Proposed Project activities. During the field visit, a viewshed analysis was conducted to identify if visual impacts would adversely affect the historic property, and if the setting would be altered. From the Hastings Adobe, several large structures associated with renewable energy structures were noted within the viewshed (Figure 7-2). The addition of structures associated with the construction of a transmission line for the Proposed Project would not constitute significant changes to the visual landscape as it currently exists to adversely affect the setting or feeling of the historic property. Due to deterioration, vandalism, and the addition of new materials, including the reinforced structure around the adobe and a porch area, the integrity of the Hastings Adobe's exterior design has been compromised, and the building's significance is communicated through the integrity of the design, materials, and workmanship of adobe's interior. The Proposed Project would have no impact upon the feeling, setting, or location of the Hastings Adobe nor its association with Langsford W. Hastings. Additionally, the precontact component of the site could not be located due to its likely destruction associated with soil disturbances including agricultural activity and animal grazing. As such, it is recommended that the Proposed Project would result in no adverse effect to the historic property. An update to the DPR 523 site record can be found in Attachment D.



Figure 7-1. Site overview, facing south.



Figure 7-2. Site overview, facing north.

P-48-000124

P-48-000124 was last recorded in 2010 and was described as a barn, the remains of a water tower, three depressions (of which two may be privies and one a possible cellar), and a eucalyptus windbreak. The artifact scatter was recorded as consisting of bricks, ceramics, metal, and glass debris dispersed throughout the recorded site boundary. During the revisit for this Proposed Project, the barn was no longer extant, and neither the water tower nor the three depressions could be located. The stump of a eucalyptus tree was noted within the site boundary. A small makeshift corral has been constructed 200 feet west of where the barn once stood and 50 feet east of Stratton Lane. The corral is constructed from a mixture of more modern materials and historic debris possibly taken from the destroyed barn. The corral is a rectangular shape divided into sections and measures approximately 50 feet (north-south) by 100 feet (east-west). The corral includes a wooden loading ramp on its south edge, based on the size of the ramp it was likely used for sheep. A mixture of round wooden and metal "T" posts supports wire fencing welded to rectangular metal plates. Based on historic aerials, the corral in its current form was constructed sometime after 2014, after destruction of the barn.

A historic artifact scatter remains, consisting of glass, ceramic, and wood fragments was identified. Approximately 30 glass shards were observed, including milk glass, blue, green, clear, and aqua glass. Two ceramic white ware sherds were observed. Additionally, one piece of milled lumber was observed, but, due to dense vegetation, was unable to be further inspected. Observed artifacts were generally fragmented and broken. The artifact scatter was observed to be eroding downslope towards the north, and a few pieces of glass were identified outside of the previously recorded site boundary. Due to the lack of integrity of the site, site boundaries were not updated. A modern stock tank was observed within the site boundary, and heavy construction machinery was staged west of

P-48-000124. Overall, the site was in poor condition, and previously described structures and features appear to have been destroyed (Figure 7-3 and Figure 7-4).

The site is within the Proposed API/APE just east of the proposed location that the LSPGC Collinsville Substation would be constructed, below the proposed 500 kV transmission line segment between towers 01B and 02B (Figure 1 in Attachment E; Figure 1-8). It is not likely to be directly impacted by Proposed Project construction.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). No evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to suggest that the barn itself was associated with any specific event of importance in American history or that it was associated with a pattern of events making a significant contribution in the development of Solano County or California. As such, P-48-000124 does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.



Figure 7-3. Site overview, facing north.



Figure 7-4. Site overview, facing south.

Criterion B/2: Associated with the lives of persons significant in our past.

Historic maps indicate the barn was constructed prior to 1877 on land owned by Knox Marshall (Thompson and West 1877). The Marshall family was involved in establishing Montezuma Township, which later became Collinsville. The family-owned land within and around the Proposed API/APE and occupied the Hastings Adobe in the early twentieth century. Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). The Marshalls sold this land to S. O. Stratton in 1908. The Stratton family owned the land until 1963 when the land was bought by PG&E (see Section 3.4.3 Historical Era and Section 5.2, the archival research results discussion, of this report). It is therefore unclear if the barn that was recorded was the original one built by the Marshalls or if the Strattons had replaced it with a later barn. The local histories and historic maps were consulted for this Proposed Project (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report), and websites such as Ancestry.com and Newspapers.com were searched for additional information on the Marshalls and the Strattons. No additional information was found that would suggest that either the Marshalls or the Strattons made significant additional contributions to the history of Solano County or California. Therefore, the site is not historically significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. The site has been extensively

altered from its original appearance. Neither the barn nor the water tower is extant. As such, the building does not possess historical significance under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). Although the site is an example of early homesteading or farming, the site has been largely destroyed, and because of the limited artifact scatter still present at the site, the property is not likely to possess enough data to yield important or new information that could be used to answer research questions. Therefore, P-48-000124 does not appear to be significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains much of its undeveloped and rural setting. Because the original structure no longer stands, it has lost all of its integrity of design, materials, workmanship, and historic feeling. Although some element of the property's association with the surrounding landscape persists, it is mostly lost because of the wreckage and removal of the original structures.

Conclusion

P-48-000124 does not possess historical significance under any of the evaluation criteria. Additionally, the site has been largely destroyed and no longer retains integrity. Chronicle Heritage recommends that the site is not eligible for inclusion in the NRHP/CRHR. An update to the DPR 523 site record can be found in Attachment D.

P-48-000125

P-48-000125 was first recorded in 1980 by C. Peeler Crist and updated in 2010 by Far Western. The original site record described the site as a scatter of ceramics, glass, brick, construction materials, and a possible septic tank. The 2010 site revisit was unable to locate the artifacts or the septic tank but did identify a pipe and wood-covered hole that was previously described. Disturbances noted in the 2010 revisit include overgrown vegetation, animal grazing, and modern use of the area, reflected by the construction of a cement water well and pump. During the 2023 revisit for this Proposed Project, an artifact scatter consisting of domestic refuse was observed, including eight glass shards, two ceramic sherds, four bricks or brick fragments, a ferrous metal dowel, and an iron rod. Additionally, a well and modern water pump were noted. Disturbances included overgrown vegetation, animal grazing, and the construction of an adjacent road (Figure 7-5 and Figure 7-6).

The site is within the Proposed API/APE just west of the proposed location of the LSPGC Collinsville Substation and immediately north of Stratton Lane (Figure 1 in Attachment E; Figure 1-8). It is not likely to be directly impacted by Proposed Project construction.



Figure 7-5. Site overview, facing south.



Figure 7-6. Site overview, facing north.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). No evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to suggest that P-48-000125 was ever associated with a specific event of importance in American history or that it was associated with a pattern of events making a significant contribution in the development of Solano County or California. As such, the property does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). Research did not identify a specific individual or group that was associated with P-48-000125 that had any connection of importance to the history of California. An 1877 historic map indicates that the Collinsville District School stood in the vicinity of the site, but no further information regarding the school or land ownership at the site could be uncovered. E. T. Upham and then later the Marshalls may have owned this land, but the remains found at site P-48-000125 cannot be associated with any of these early settlers in the area. The round nails found on site likely date to after this time. The local histories and maps were consulted for this Proposed Project (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report), and websites such as Ancestry.com or Newspapers.com did not turn up any further information on the owners of this site. The site is not historically significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. P-48-000125 currently consists of a historic artifact scatter of non-diagnostic material including glass, ceramics, metal, and construction materials so any distinctive characteristics of a type, period, or method of construction have been lost. Overall, the site does not represent a significant or distinguishable entity. As such, the site does not possess historical significance under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). Although the site may be associated with early homesteading or farming, the site lacks an adequate archaeological component based on the limited number of artifacts and the non-diagnostic nature of the assemblage. Because of disturbances from agriculture and grazing, the site does not indicate the potential for significant subsurface deposits. This site is not likely to yield enough data or important or new information that could be used to answer

research questions. Therefore, P-48-000125 is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains some of its undeveloped and rural setting. Because the original structure no longer stands, it has lost all of its integrity of design, materials, workmanship, and historic feeling. Although some element of the property's association with the surrounding landscape persists, it is mostly lost because of the wreckage and removal of the original structure.

Conclusion

P-48-000125 does not possess historical significance under any of the evaluation criteria. Chronicle Heritage recommends that the site is not eligible for inclusion in the NRHP and CRHR. An update to the DPR 523 site record for the site can be found in Attachment D.

P-48-000128

P-48-000128 was first recorded in 1980 (Maniery et al. 1980) as a historic homestead site based on ethnographic accounts. Archaeological evidence for the homestead consisted of three ceramic fragments, square nails, and burned wooden boards. The site was revisited by Adrian Whitaker in 2010 (Whitaker 2010), but no elements of the site were located at that time. Disturbances consisted of recent soil disking associated with mechanical agricultural land management practices (Figure 7-7). During the revisit for this Proposed Project, Chronicle Heritage archaeologists identified a single fragment of window glass and observed disturbances consistent with agricultural mowing.

The site is within the Proposed API/APE just south of the proposed location of the LSPGC Collinsville Substation (Figure 1 in Attachment E; Figure 1-8). It is not likely to be directly impacted by Proposed Project construction.



Figure 7-7. Site overview, facing north.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). P-48-000128 was initially recorded as a homestead site based on ethnographic accounts, but no evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to link P-48-000128 with a specific event of importance in American history or with a pattern of events making a significant contribution in the development of the Solano County or California. As such, the subject property does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). An 1877 historic map indicates the site may have been within an area owned by C. Dadami (Thompson and West 1877). Archival research indicates Charles Dadami was born in 1848 in Switzerland and immigrated to the U.S. in 1867. In the 1880 U.S. Census he is listed along with his wife and two children as a farmer living in Montezuma. In 1892 he is listed in the register of voters where it says his date of naturalization was March 2, 1870, in San Francisco. Here he is listed as living in Collinsville. Charles Dadami died in 1917 and is buried at the Collinsville Cemetery (FindAGrave 2023). Although Charles Dadami was an early Collinsville settler and was

active in the community and the Catholic Church, the local histories consulted for this Proposed Project (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report) and the websites such as Ancestry.com and Newspapers.com that were searched for additional information on Dadami did not indicate that he contributed significantly to the history of Collinsville, Solano County, California, or the United States (Theodoratus Cultural Research 1980). Therefore, P-48-000128 does not appear to be significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. The homestead reported at P-48-000128 has never been formally documented despite the location suggested by ethnographic reports. The existing artifact scatter is limited to a single non-diagnostic glass artifact, so any distinctive characteristics of a type, period, or method of construction have been lost. As such, P-48-000128 does not appear to be historically significant under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). Although the site may be associated with early homesteading or farming, the site lacks an adequate archaeological component since no significant archaeological component has been observed during the two most recent site visits. The property is not likely to yield enough data or important or new information that could be used to answer research questions. Therefore, P-48-000128 is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains some of its undeveloped and rural setting. Because the original structure no longer stands, it has lost all of its integrity of design, materials, workmanship, and historic feeling. Although some element of the property's association with the surrounding landscape persists, it is mostly lost because of the wreckage and removal of the original structure.

Conclusion

P-48-000128 does not possess historical significance under any of the evaluation criteria. Therefore, a formal discussion of historical integrity is not required. Chronicle Heritage recommends that the site is not eligible for inclusion in the NRHP or CRHR. An update to the DPR 523 site record can be found in Attachment D.

P-48-000139

P-48-000139 was first recorded by Gebhardt et al. (1980). Chronicle Heritage archaeologists revisited P-48-000139 on October 18, 2023 (Figure 7-8). The site boundary was consistent with the 1980 Sketch Map (Gebhardt et al. 1980) but was inconsistent with the GIS site boundary obtained from the

Northwest Information Center. The site was located around 100 meters south of the GIS-documented site boundary. The historical domestic refuse scatter was successfully relocated and an obsidian biface isolated was found, technically making the site multi-component. In total, nine glass shards, three sherds of white improved earthenware, and one large indeterminate metal piece was found. Of the glass, eight were colorless and one was violet. There were no maker's marks or other diagnostic elements on any of the ceramic sherds. An isolate obsidian biface was found on the site (Figure 7-9), technically making it a multicomponent site.

Additionally, the previously observed fence line and much of the concrete structural remains from 2010 were no longer visible within the site. The fence line has since been removed entirely. Consistent with the original site records, several pepper and eucalyptus trees are still standing within the site. Other vegetation includes horehound, mustard, star thistle, turkey mullein, pigweed, and blindweed. The slope was variable with the center of the site being on a hill with a 7 degree south-facing slope.

Chronicle Heritage archaeologists updated the GIS site boundary to accurately depict the site's observed location.

The site is adjacent to the Proposed API/APE just south of the proposed location of the LSPGC Collinsville Substation, along the southern unpaved extent of Stratton Lane (Figure 1 in Attachment E; Figure 1-8). It is not likely to be directly impacted by Proposed Project construction.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). P-48-000139 was initially recorded as a homestead site, but no evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to link P-48-000139 with a specific event of importance in American history or with a pattern of events making a significant contribution in the development of the Solano County or California. As such, the subject property does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.



Figure 7-8. Site overview, facing east.



Figure 7-9. Obsidian biface observed on site P-48-000139.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). Historic maps indicate that the land prior to 1877 was owned by L. P. Marshall (Thompson and West 1877) and then after his death to S. M. Marshall (see Figure 4-2, the 1890 Eager map). L. P. Marshall appears in the 1860 U.S. Census as a 60-year-old “stock raiser” from Kentucky. Upon his death in 1888, the land went to his surviving family. S. M. Marshall is potentially his surviving spouse, but this is not clear from the few available records. The Marshalls eventually sold this land to S. O. Stratton in 1908. Samuel O. Stratton appears in the 1930 U.S. Census as a 75-year-old, retired man with his wife and an adult child. According to the voter registration records, he was a farmer. The census record also shows that he was a naturalized citizen from Canada of Irish decent. The Stratton family owned the land until 1963 when they sold the land to PG&E (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report). No structures were built on the site during these early periods, and the debris that were recorded were probably a later trash dump during the period of Stratton ownership. The local histories were consulted (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report), and websites such as Ancestry.com and Newspapers.com were searched for additional information on the Marshalls and the Strattons. No additional information was found that would suggest that either the Marshalls or the Strattons made significant contributions to the history of Solano County or California. Therefore, P-48-000139 does not appear to be significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. The existing artifact scatter is limited to non-diagnostic material, so any distinctive characteristics of a type, period, or method of construction, if it ever existed here, have been lost. As such, P-48-000139 does not appear to be historically significant under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). Although the site may be associated with early homesteading or farming, the site lacks an adequate archaeological component since no significant archaeological component has been observed during the two most recent site visits. The obsidian biface appears to be an isolate as no evidence of any other precontact deposits was observed on the site which has been heavily impacted by agricultural work. The property is not likely to yield enough data or important or new information that could be used to answer research questions. Therefore, P-48-000139 is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains some of its undeveloped and rural setting. Because the original structure no longer stands, it has lost all of its integrity of design, materials, workmanship, and historic feeling.

Although some element of the property's association with the surrounding landscape persists, it is mostly lost because of the wreckage and removal of the original structure.

Conclusion

P-48-000139 does not possess historical significance under any of the evaluation criteria. Therefore, a formal discussion of historical integrity is not required. Chronicle Heritage recommends that the site is not eligible for inclusion in the NRHP or CRHR. An update to the DPR 523 site record can be found in Attachment D.

P-48-000140

P-48-000140 was initially recorded in 1980 as a homesite with several features, including a possible well, a pit area with wooden structural remains, and historic artifacts. The site was revisited by Far Western in 2010, and only the pepper trees documented in 1980 were relocated. The 2010 revisit indicated bulldozers and other excavation activities had heavily modified the site's surface to create a recreational off-road motorcycle course (Figure 7-9). Chronicle Heritage revisited the site for this Proposed Project and identified five shards of non-diagnostic glass, a rusted and fragmented jerry can, a small pile of wood planks, and the previously documented pepper trees. Additionally, a modern rubber and concrete stock pond was noted in the northern portion of the site (Figure 7-10). Disturbances include evidence of earthmoving activities previously described in the 2010 update, modern refuse such as plastics and rebar, and evidence of target shooting, including shotgun shells and small caliber ammunition casings throughout the site.

The site is within the Proposed API/APE just south of the proposed location of the LSPGC Collinsville Substation, on the west side of the unpaved southern extent of Stratton Lane (Figure 1 in Attachment E; Figure 1-8). It is not likely to be directly impacted by Proposed Project construction.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). P-48-000140 was first recorded in 1980 as a homesite with several domestic features, including a well, structural remains of a pit, and a historic artifact scatter. No evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to link P-48-000140 with a specific event of importance in American history or with a pattern of events making a significant contribution in the development in Solano County, California, or the United States. As such, the subject property does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.



Figure 7-10. Site overview, facing north.



Figure 7-11. Site overview, facing south.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). The ranching features associated with this site are about 500 feet north of P-48-000139 and are on land owned by the Marshall and Stratton families (see P-48-000139 for a discussion of these landowners). The local histories were consulted for this Proposed Project (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report), and websites such as Ancestry.com and Newspapers.com were searched for additional information on the Marshalls and the Strattons. No additional information was found that would suggest that either the Marshalls or the Strattons made significant contributions to the history of Solano County or California. Therefore, P-48-000140 is not historically significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. P-48-000140 has been extensively altered from its original appearance as a result of agricultural activity and earthmoving associated with recreational vehicle trail construction, and the site is largely destroyed. None of the originally documented features remain, so any distinctive characteristics of a type, period, or method of construction have been lost. As such, the site does not possess historical significance under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). Although the site may be associated with early homesteading or farming, the site lacks an adequate archaeological component since the site does not retain any of the features for which it was originally documented. The associated artifact scatter is limited in size, and artifacts were observed to be fragmented, broken, and non-diagnostic. It is unlikely a significant or intact subsurface archaeological deposit exists, and the area has been subject to significant disturbances, including large-scale earth movement. The property is not likely to yield enough data or important or new information that could be used to answer research questions. Therefore, P-48-000140 is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains some of its undeveloped and rural setting. Because the original structure no longer stands, it has lost all of its integrity of design, materials, workmanship, and historic feeling. Although some element of the property's association with the surrounding landscape persists, it is mostly lost because of the wreckage and removal of the original structure.

Conclusion

P-48-000140 does not possess historical significance under any of the evaluation criteria. The site has been significantly disturbed and little of the elements described in the original site recording exist.

Chronicle Heritage recommends that the site is not eligible for inclusion in the NRHP or CRHR. An update to the DPR 523 site record can be found in Attachment D.

P-48-000416

P-48-000140 was initially recorded in 1980 as a homesite with several features, including a cellar hole, three depressions, and a scatter of bricks (Crist et al. 1980). Chronicle Heritage revisited the site for this Proposed Project and identified the scatter of red bricks and one depression (Figure 7-12). However, the pepper tree, cellar, and wood pile described in the original records were not located. One historic glass bottle was identified with an "Owens" maker's mark. Ground visibility was poor and ranged from 10 to 20 percent throughout the site, with some areas of exposed soil and larger areas of dense vegetation. Vegetation consisted of low to tall grasses and weeds, including star thistle, turkey mullein, pigweed, and blindweed. The site was relatively flat with no slope. Disturbances included modern activity evident by the presence of modern PVC pipe, clay pigeons, and modern shot gun shells.

The site is just outside the Proposed API/APE west of the proposed location of the LSPGC Collinsville substation will be constructed and south of Stratton Lane (Figure 1 in Attachment E; Figure 1-8). It is not likely to be directly impacted by Proposed Project construction.



Figure 7-12. Site overview, facing southwest.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). P-48-000416 was first recorded in 1980 as a homesite with several domestic features, including a cellar hole, three depressions, and a brick scatter. No evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to link P-48-000416 with a specific event of importance in American history or with a pattern of events making a significant contribution in the development in Solano County, California, or the United States. As such, the subject property does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). The historic maps (Figures 4-1 and 4-2) indicate the site may have been land owned by C[harles]. H. Rice. Charles H. Rice appears in the 1880 U.S. Census along with his wife and brother. He was listed as a 41-year-old farmer from Michigan. He also appeared in the voter registration lists for 1871, and his occupation was listed as a farmer. The local histories were consulted for this Proposed Project (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report), and websites such as Ancestry.com and Newspapers.com were searched for additional information on Charles H. Rice. No additional information was found that would suggest that he made a significant contribution to the history of Solano County or California. Therefore, P-48-000416 is not historically significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. P-48-000416 has been extensively altered from its original appearance as a result of agricultural activity, and the site is largely destroyed. Only a few of the originally documented features remain, so any distinctive characteristics of a type, period, or method of construction have been lost. As such, the site does not possess historical significance under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). Although the site may be associated with early homesteading or farming, the site lacks an adequate archaeological component since the site retains few of the features for which it was originally documented. The associated artifact scatter is limited in size, and artifacts were observed to be modern and not associated with the original site. It is unlikely that a significant or intact subsurface archaeological deposit exists, and the area has been subject to significant disturbances, including extensive ground disturbance. The property is not likely to yield

enough data or important or new information that could be used to answer research questions. Therefore, P-48-000416 is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains some of its undeveloped and rural setting. Because the original structure no longer stands, it has lost all of its integrity of design, materials, workmanship, and historic feeling. Although some element of the property's association with the surrounding landscape persists, it is mostly lost because of the wreckage and removal of the original structure.

Conclusion

P-48-000416 does not possess historical significance under any of the evaluation criteria. The site has been significantly disturbed and little of the elements described in the original site recording exist. Chronicle Heritage recommends the line is not eligible for inclusion in the NRHP or CRHR. An update to the DPR 523 site record can be found in Attachment D.

P-48-000521

P-48-000521 was initially recorded in 1980 as a ranch complex with several features, a collapsed structure, two barns, and a corral (Roark and Avina 2001). Chronicle Heritage revisited the site for this Proposed Project and identified the corral, water basins for cattle, and an assortment of steel t-posts and barbed wire fencing (Figure 7-13). The property is currently being used as a cattle corral, which has been upgraded with new fencing and wire. The barn structures and concrete pad are no longer present on site. The site was not entered as the boundary was occupied by a small herd of roughly 20 cattle behind a barbed wire fence with no trespassing signs posted. Vegetation consisted of low grasses and thistles matted down by livestock activities. Several trees were identified within the site boundary including eucalyptus, pepper trees, and live oak. The slope within the site was relatively flat with a gentle northeastern slope. Ground visibility was fair with roughly 20 percent visibility. Extensive disturbance from cattle trampling over the whole area was evident.

The site is outside the Proposed API/APE just north of the proposed location of the LSPGC Collinsville Substation (Figure 1 in Attachment E). It is not likely to be directly impacted by Proposed Project construction.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). P-48-000521 was first recorded in 2001 as a ranch site with several associated features, including a collapsed structure, two barns, and a corral. No evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to link P-48-000521 with a specific event of importance in American history or with a pattern of events making a significant contribution in the development in Solano County,

California, or the United States. As such, the subject property does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.



Figure 7-13. Site overview, facing north.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). The historic maps (Figures 4-1 and 4-2) indicate the site was on land owned by William B. Brown. He appeared in the 1870 Federal Census records as a farmer residing in Montezuma township. Minimal additional information could be found about William B. Brown. The local histories were consulted for this Proposed Project (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this reports), and websites such as Ancestry.com and Newspapers.com were searched for additional information on William B. Brown. No additional information was found that would suggest that he made a significant contribution to the history of Solano County or California. Therefore, P-48-000521 is not historically significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. P-48-000521 has been extensively altered from its original appearance as a result of agricultural activity, and the site is largely destroyed. Only the corral of the originally documented features remains, and it has been upgraded

with new fencing and barbed wire, so any distinctive characteristics of a type, period, or method of construction have been lost. As such, the site does not possess historical significance under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). Although the site may be associated with early homesteading or farming, the site lacks an adequate archaeological component. No associated artifacts were observed. It is unlikely that a significant or intact subsurface archaeological deposit exists, and the area has been subject to significant disturbances, including extensive ground disturbance from cattle trampling the area. The property is not likely to yield enough data or important or new information that could be used to answer research questions. Therefore, P-48-000521 is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains some of its undeveloped and rural setting. Because the original structures no longer stand, it has lost all of its integrity of design, materials, workmanship, and historic feeling. Although some element of the property's association with the surrounding landscape persists, it is mostly lost because of the removal of the original structure.

Conclusion

P-48-000521 does not possess historical significance under any of the evaluation criteria. The site has been significantly disturbed and little of the elements described in the original site recording exist. Chronicle Heritage recommends that the site is not eligible for inclusion in the NRHP or CRHR. An update to the DPR 523 site record can be found in Attachment D.

P-48-000981

P-48-000981 includes Grizzly Island Road, Collinsville Road, and Chadbourne Road. The collection of roads supported the transportation of goods to permanent populations in the marshlands made possible by reclamation projects during the early twentieth century. Cheryl Brookshear (2013) evaluated P-48-000981 for eligibility for listing in the NRHP and CRHR and found that P-48-000981 was not significant under any of the eligibility criteria, and was found to be ineligible for the NRHP, CRHR, or local designation through survey evaluation. An approximately 130-foot-long segment of Collinsville Road, a regularly maintained county road, passes through the western edge of the Proposed API/APE. The portion of Collinsville Road that intersects the Proposed API/APE was revisited during the field survey for this Proposed Project (Figure 7-14). No historic or precontact artifacts were identified along the portion of Collinsville Road that intersects the Proposed API/APE. Additionally, the overall character and components of Collinsville Road were consistent with the descriptions provided in Brookshear's 2013 evaluation.

A portion of Collinsville Road is within the Proposed API/APE, immediately west of the west end of Stratton Lane (Figure 1 in Attachment E; Figure 1-9). It is not likely to be directly impacted by Proposed Project construction.



Figure 7-14. Site overview, facing east (Google Maps 2023).

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). Although the roads may have been serviceable pathways for local residents, no evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to link P-48-000981 to a specific event of importance in American history or to a pattern of events making a significant contribution in the development of the Solano County or California. As such, the roads do not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). The road is named after Charles J. Collins, an early settler in the area, who owned land in the Collinsville area in 1867 according to land office records. These records indicate his land was in the N $\frac{1}{2}$ of the N $\frac{1}{4}$ of section 22, which places the land north of present-day Collinsville. The historic maps (Figures 4-1 and 4-2) indicate this land had different owners by 1876. The local histories were consulted for this Proposed Project (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report), and websites such as Ancestry.com and Newspapers.com were searched for additional information on

Charles J. Collins. No additional information was found that would suggest that he made a significant contribution to the history of Solano County or California. Brookshear's 2013 evaluation found that Collinsville Road is maintained by Solano County and is not associated with any single individual. The field identification effort for this Proposed Project did not identify associations with the portion of Collinsville Road that intersects the Proposed API/APE. Collinsville Road is, therefore, not found to be historically significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. Brookshear's evaluation found that P-48-000981 exhibits common features of roads found throughout rural and urban areas and does not exhibit significance in relation to road construction (Brookshear 2013). P-48-000981 consists of a paved road that was constructed with standard materials, methods, and techniques (Brookshear 2013). No evidence demonstrating significance related to a type, period, or method of construction was observed during the field identification effort for this Proposed Project. As such, Collinsville Road does not possess historical significance under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). Although the roads may be associated with early settlement, the site lacks an adequate archaeological component. Collinsville Road is not likely to yield important, new information about design, construction methods, materials, or engineering that could not be ascertained through literature review or from other existing sources. No archaeological deposits were observed during the surface inspection, and any potential subsurface deposits have likely been impacted by road construction and agricultural activity. Therefore, Collinsville Road is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains some of its undeveloped and rural setting. It is not clear if the original surfaces of the roads exist because they have been continually maintained by the county. As a result, it has lost some of its integrity of design, materials, workmanship, and historic feeling. Some element of the property's association with the surrounding landscape persists even though the structures fronting the roads have mostly changed through time.

Conclusion

The portion of Collinsville Road intersecting the Proposed API/APE does not possess historical significance under any of the evaluation criteria. Therefore, a formal discussion of historical integrity is not required. Chronicle Heritage recommends that the road is not eligible for inclusion in the NRHP or CRHR.

P-07-002956

The subject property consists of two 230 kV PG&E transmission lines that traverse a large swath of Contra Costa County from east to west. The site was originally recorded on December 6, 2017 by Dana E. Supernowicz, Architectural Historian, Historic Resource Associates. The site was revisited by Archaeologists Ashley Garrett and Josh Noyer of Chronicle Heritage on December 19, 2023 (Figures 7-15 and 7-16). The transmission lines appear to be unchanged since they were last recorded in 2017. The two lines were found running parallel to each other heading southeast to northwest from the city of Pittsburg across an open field and into the Pittsburg Substation. The two towers directly adjacent to the substation show signs of rusting on the support beams and "X" patterned lattice beams.

The site crosses above the Proposed API/APE where it enters the Pittsburg Substation (Figure 2 and Figure 3 in Attachment E; Figure 1-13). It is not likely to be directly impacted by Proposed Project construction.



Figure 7-15. Overview of P-07-002956. View north.



Figure 7-16. Overview of P-07-002956. View east.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). The Pittsburg-Tesla 230 kV Transmission Line and Contra Costa-Moraga 230 kV Transmission Line contribute to the significance of PG&E's development of electrical power and power transmission in northern California (specifically Alameda and Contra Costa counties) in the 20th century. The need for the expansion of the electrical power supply in northern California was particularly acute during the 1920s, when the demand for electricity grew in relationship to commercial and residential development, and during the 1950s, when rapid suburban development occurred in the east Bay Area after WWII (Supernowicz 2017). The transmission lines represent two important developments that connect cities in Alameda and Contra Costa County to electrical transmission grids organized around substations in Pittsburg, Tesla, and Moraga. This development and expansion of the electrical power grid was vital to the historic development in this area of California. As such, the subject property does appear to meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). No evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section

5.2, the archival research results discussion, of this report for this report to suggest that the subject property is associated with a specific individual or group important to the history of California or beyond. The site is not historically significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). The transmission lines were designed as utilitarian electrical transmission lines, and, therefore, do not exhibit any distinctive or pioneering engineering features in the field of long electrical power transmission, or the development of electrical power in northern California (Lang 2008). However, the construction of these two lines used towers with lattice bracing and height consistent with tower design that was characteristic of the transmission tower from the 1920s through the 1940s. However, contra Supernowicz (2017), the towers do not appear to reach a level of historical significance required under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). The components used in the construction of the transmission line and its method of construction, although diagnostic for dating, are generic and are similar to components and methods used in the construction of modern transmission lines. The transmission lines are not likely to yield important, new information about design, construction methods, materials, or engineering that could not be ascertained through literature review or from other existing sources. Therefore, the transmission lines are not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity:

For a property to be eligible for listing on the CRHR/NRHP it must retain sufficient integrity. The transmission lines appear to retain good integrity of design, materials, setting, association, and feeling, having minimal or no apparent major alterations, with the exception of upgrades to the lines and insulators (Supernowicz 2017). Therefore, the integrity of the transmission lines supports the evaluation that P-07-002956 is eligible for listing in the NRHP and CRHP based on criterion A/1.

Conclusion

This resource is recommended eligible for inclusion in the NRHP and CRHP under criterion A/1. The historic context of the subject property is also rooted in the creation of PG&E and the development of a reliable supply of electrical power throughout Contra Costa and Alameda counties during the early to mid-twentieth century. PG&E was formed in 1905 by the merger of the San Francisco Gas & Electric Company and the California Gas & Electric Company. The need for transmission lines in northern California was particularly acute during the 1920s, when the demand for electricity grew in relationship to commercial and residential development, and during the 1950s, when rapid suburban development occurred in the east Bay Area (Coleman 1952; PG&E Website 2017). The subject property represents two important high-voltage electrical transmission grids that link cities in Contra Costa County to substations and communities in western Contra Costa County. The transmission tie lines distribute power to businesses and residences throughout the region.

AG-001

This newly recorded site is a historic-period artifact scatter consisting of assorted domestic materials, including kitchen appliances such as a refrigerator, oven, and water heater; construction materials such as concrete and brick fragments; and metal and glass. Generally, artifacts were observed fragmented, rusted, or broken. Two concrete postholes and pieces of two-by-four lumber were observed within the site. Historic aerial imagery (NETR 2023) does not indicate that a residence was previously constructed at the site's location. The site is approximately 67 feet north-south by 70 feet east-west and is approximately 105 feet northeast of the bank of the Sacramento River (Figure 7-17 and Figure 7-18).

In 2023, a small structure near AG-001 was brought to the attention of Chronicle Heritage. In the summer of 2023, Associate Archaeologist Ashley Garrett attempted to survey this location but could not see the structure through tall grass. In September 2024, the shack was documented in photographs. These photographs show a small, informal structure made of plywood with a flat, haphazard roof, and a small door (Figure 7-19).

Hannah Goldman, Associate Architectural Historian, reviewed the survey photographs and historical aerial imagery to determine the building's approximate age. As it first appears on aerial imagery in August 2016 after a major flood in March 2016, there is no evidence that the building meets the historic age threshold.

Many structures have been constructed along the water's edge over the years for recreational and rural subsistence purposes. While resources like AG-001 are visible in aerial imagery as early as 2002 (Google Earth Pro, 5/2002 USGS Aerial Imagery), small sheds or structures first appeared on satellite imagery in the area in February 2008 but not in the location of the shed in question. The number of sheds in the area fluctuated; in some months, they were present, and in others, they were gone entirely (February and September 2008, for example). This suggests that they are seasonal structures. Their location also subjects them to the elements such as fire or flooding. Between April and June 2013, the area near the bank in question went from a vibrant green to a dark brown, and many tire tracks were apparent. There is only one shed in this Figure 7-19. In March 2016, the area appeared flooded, with the shed in question missing entirely and the shed that is most reliably photographed shown underwater when previously it stayed around 30 feet from the shore.

Based on this photographic evidence, the shed located next to the AG-001 resource is not a historic-era resource, and it has been moved in recent years, so it is not eligible for consideration as a historic resource. It was therefore not included in the site AG-001 or recorded as a separate resource.

The site is within the Proposed API/APE just east of the proposed location of the 230 kV overhead transmission line just before it enters the river (Figure 1 in Attachment E; Figure 1-11). It is not likely to be directly impacted by Proposed Project construction.



Figure 7-17. Site overview, facing northeast.



Figure 7-18. Site overview, facing northwest.



Figure 7-19. Overview of shack, facing east.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). No evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to link this site with broader patterns of history. This site is associated with a historic local occupation and likely represents a dumping episode in the mid-twentieth century. This site cannot be associated with significant events of that period. As such, the subject property does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). Historic maps indicate that the land prior to 1877 was owned by L. P. Marshall (Thompson and West 1877) and then, after his death, owned by S. M. Marshall (see Figure 4-2, the 1890 Eager map). L. P. Marshall appeared in the 1860 U.S. Census as a 60-year-old “stock raiser” from Kentucky. Upon his death in 1888, the land went to his surviving family. S. M. Marshall is likely his surviving spouse, but this is not clear from the few available records. The Marshalls eventually sold this land to S. O. Stratton in 1908. Samuel O. Stratton appeared in the 1930 U.S. Census as a 75-[69-?] year-old retired man with his wife and an adult child. According to the voter registration records, he was a farmer. The census record also showed that he was a naturalized citizen from Canada of Irish decent. The Stratton family owned the land until 1963 when the land was sold to PG&E (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results

discussion, of this report). No structures were built on the site during these early periods and the debris that was recorded was probably a later trash dump during the period of Stratton ownership. The local histories were consulted for this Proposed Project (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report), and websites such as Ancestry.com and Newspapers.com were searched for additional information on the Marshalls and the Strattons. No additional information was found that would suggest that either the Marshalls or the Strattons made significant contributions to the history of Solano County or California. Also, the artifacts are much later than the earlier periods of settlement and although they may have some connection to the later period of Stratton ownership, this connection cannot be determined. Therefore, there is no evidence that it is linked to an individual who made an important contribution to the history of California or beyond. The site is composed of mid-twentieth-century materials and is not associated with the early settlers of the nineteenth century. The site is not historically significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. The site represents common household items and construction materials of the mid-twentieth century that have been discarded in an open area. The deposit does not contain artifacts that embody the distinctive characteristics of a type, period, or method of construction. There are no architectural components associated with the site. As such, the site does not possess historical significance under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). Although the roads may be associated with early settlement, the site lacks an adequate archaeological component. The artifact scatter is limited in size, and artifacts were observed to be mostly discarded household appliances that cannot be associated with a particular household. It is unlikely that a significant or intact subsurface archaeological deposit exists, and the area has been subject to significant disturbances. The property is not likely to yield enough data or important or new information that could be used to answer research questions. Therefore, the site is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains some of its undeveloped and rural setting. Because it is not associated with an original structure, it does not possess integrity of design, materials, workmanship, and historic feeling. Although some element of the property's association with the surrounding landscape persists, it lacks importance as a small discard area with no historic associations.

Conclusion

The site does not possess historical significance under any of the evaluation criteria. All observed artifacts were fragmented, rusted, or broken and in poor condition. Chronicle Heritage recommends that the site is not eligible for inclusion in the NRHP or CRHR.

AG-002

This resource consists of approximately 1,700 feet of railroad segment from the Burlington Northern Santa Fe (BNSF) Railway line (Figures 7-20 and 7-21). The railway originates from the Sacramento Northern Railway and travels north-northeast with a turn to the east in the north portion of the Proposed API/APE. This segment of tracks has moderate integrity with its railroad ties and spikes still in place. The wooden railroad ties measure 7.5 x 7.5 inches. The rail tracks are 4 feet apart with an 8.5-inch gauge. This resource is largely intact. However, the rail ties are covered in sand and gravel sediment in some sections. Along the observed portion of the tracks there are three asphalt road crossings that have paved over the rail ties with the tracks still visible through the asphalt. Archival research dates this section of railroad to 1953 (USGS 1953).

The site crosses the Proposed API/APE above the proposed underground location of the 230 kV transmission line (Figure 2 and Figure 3 in Attachment E; Figure 1-13). It is not likely to be directly impacted by Proposed Project construction.



Figure 7-20. Overview of the Burlington Northern Santa Fe Railway line. View north-northeast.



Figure 7-21. Overview of the Burlington Northern Santa Fe Railway line. View north-southeast.

Significance Evaluation

Criterion 1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). The subject property is a railroad spur off of the main BNSF line that lies approximately 0.7 mile to the south. Although the main line has significance because of its connection to the development of the railroad and its impact on the history of the nation and the state, the spur line does not appear to contribute to the significance of the main line. As such, the subject property does not appear to meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.

Criterion 2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). The spur first appears on the 1953 topographic maps and may be associated with the construction of the substation. No evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report that shows the spur is associated with a specific individual or group important to the history of the county, California, or nation. The rail line is composed of mid-to-late twentieth-century materials and is not associated with the early settlers of the nineteenth century. The site is not historically significant under NRHP Criterion B or CRHR Criterion 2

Criterion 3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. The rail line appears to be constructed as a standard gauge rail, ties, and other hardware. There is nothing distinctive in the materials or methods of the construction of the rail line. As such, the rail line does not possess historical significance under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). The property is not likely to yield important, new information about design, construction methods, materials, or engineering that could not be ascertained through literature review or from other existing sources. Therefore, the site is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the spur line can be made. The property is still in its original location, which retains its industrial setting. Because it is a standard gauge spur line that is still in place, it does possess integrity of design, materials, workmanship, historic feeling, and its association with the surrounding environment persists. It lacks importance as a small spur line that may have been associated with construction of the Pittsburg Substation. The line is no longer in use and has not been for some time as it has been cut off from the main BNSF line and is covered in some locations by sand and gravel.

Conclusion

In applying the evaluation criteria, this railway spur does not possess historical significance. Chronicle Heritage recommends the line is not eligible for inclusion in the NRHP or CRHR.

JN-001

The site consists of a small historic domestic structure: a green, prefabricated domicile composed of metal siding, plywood, and wood framing with a tar paper roof (Figure 7-22). Windows were aluminum framed, single pane. The main structure is rectangular with dimensions of 35 feet long (positioned NE-SW) by 15 feet wide with a southeast facing wing with dimensions of 10 by 10 feet extending to the southeast of the main structure. Historic aerial imagery indicates that this site was the location of a single-family property built sometime between 1957 and 1965. Ground visibility was variable, ranging from 5 to 10 percent visibility immediately around the structure, to 90 percent in eroded areas east of the structure. A power pole that had been cut off at a height of about 3 feet was located east of the structure. Vegetation consisted of mostly of blackberry with low to tall grasses and weeds, including star thistle, turkey mullein, pigweed, and blindweed around the periphery. The structure is completely overgrown by blackberry bushes. The structure is positioned on a mostly flat area, on top of an embankment. The slope surrounding the structure was variable with a 5 percent slope at the southern aspect and slopes ranging 15 to 30 percent towards the east. The western and

northern portions were inaccessible due to blackberry overgrowth. Disturbances included possible squatting in the structure.

The site is within the Proposed API/APE below the proposed 230 kV overhead transmission line just north of Tower 1/4 (Figure 1 in Attachment E; Figure 1-11). It is not likely to be directly impacted by Proposed Project construction.



Figure 7-22. Site overview, facing northeast.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). No evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to link this site with broader patterns of history. The site is a domestic occupation structure important only to the original inhabitants. It is possibly associated with a dumping episode located to the south and recorded as AG-001 (see previous AG-001 evaluations). Collinsville had been well-established by the mid-twentieth century, and this site is not associated with any significant events of that period. As such, the site does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). This site dates to the later part of the ownership of the land by the Stratton family, who owned the land from 1908 until 1963 when the land was sold to PG&E (see Section 3.4.3, the historical era overview; Section 5.2, the archival research results discussion; and the evaluation of AG-001). The structures may be associated with the debris that was recorded as AG-001, a trash dump from the period of Stratton ownership. The local histories were consulted for this Proposed Project (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report), and websites such as Ancestry.com and Newspapers.com were searched for additional information on the Strattons other than what was previously discussed in the evaluation of AG-001. No additional information was found that would suggest that the Strattons had made significant contributions to the history of Solano County or California. Although the site may have some connection to the later period of Stratton ownership, this connection cannot be determined. The site is comprised of mid-twentieth-century materials and is not associated with the early settlers of the nineteenth century. The site is, therefore, not found to be historically significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. The site represents common household items and construction materials of the mid-20th century. The structure is a prefabricated home, and no significant architectural components are associated with the site. As such, the site does not possess historical significance under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). The site is associated with mid-20th century settlement, but the site lacks an adequate archaeological component. The site is not likely to yield important, new information about design, construction methods, materials, or engineering that could not be ascertained through literature review or from other existing sources. No archaeological deposits were observed during the surface inspection. Therefore, the site is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains some of its undeveloped and rural setting. It still retains some of its integrity of design, materials, workmanship, and historic feeling. Some element of the property's association with the surrounding landscape persists.

Conclusion

The site does not possess historical significance under any of the evaluation criteria. Chronicle Heritage recommends that the site is not eligible for inclusion in the NRHP and CRHR.

JN-002

The site consists of an unpaved, single-lane, two-track road that is partially graveled and travels for 1.1 miles and varies between 6 to 8 feet wide. The road begins at its intersection with Stratton Lane at its north end (Figure 7-23). The 2-track road then travels southwest for approximately 100 feet and then crosses a culvert (Feature C1 in Attachment D) that is composed of railroad ties that have been paved over with a rough aggregate concrete to create a culvert/bridge feature that drains into the Marshall Cut. The 2-track road then travels towards the south along a raised (1 to 3 feet above the natural ground surface) track composed of fill soils that appear to be a mix of dredged soil from the nearby Marshall Cut channel and imported fill. Bricks and other cultural materials were observed within the fill soils of the raised portion of the track but are in a secondary context and were not recorded. The road has been poorly maintained but frequently used, with evidence of recent use and dumping at its southern terminus at site AG-001. Historic aerial imagery indicates the road was constructed sometime between 1937 and 1957. Ground visibility was variable, ranging from 5 to 10 percent visibility along the margins of the road corridor and up to 100 percent on the road surface. Vegetation along the margins of the roadway consisted mostly of low to tall grasses and weeds, including star thistle, turkey mullein, pigweed, and blindweed. Disturbances included possible alterations to the original road alignment in sections.

The site is in the Proposed API/APE traveling south from Stratton Lane to the river along the path of the proposed 230kV overhead transmission line (Figure 1 in Attachment E; Figure 1-11). It is not likely to be directly impacted by Proposed Project construction.



Figure 7-23. Site overview, facing east (Google Maps 2023).

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). Although the road may have been a serviceable pathway for local residents, no evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to link it to a specific event of importance in American history or to a pattern of events making a significant contribution in the development of the Solano County or California. As such, the road does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). This road dates to the later period of the ownership of the land by the Stratton family, who owned it from 1908 until 1963, when the land was sold to PG&E (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report and evaluation of AG-001). The local histories were consulted for this Proposed Project (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report), and websites such as Ancestry.com and Newspapers.com were searched for additional information on the Strattons other than what has already been mentioned above (see site AG-001 evaluation). No additional information was found that would suggest that the Strattons had made significant contributions to the history of Solano County or California. Although the site may have some connection to the later period of Stratton ownership, this connection cannot be determined. For example, it is unclear if the Strattons had any role in its construction. The road is, therefore, not found to be historically significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. The road exhibits common features of unpaved roads found throughout rural areas and does not exhibit significance in relation to road construction. The road consists of an unpaved road that was not constructed with standard materials, methods, and techniques. No evidence demonstrating significance related to a type, period, or method of construction was observed during the field identification effort for this Proposed Project. As such, JN-002 does not possess historical significance under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). Although the road may be associated with early settlement, the site lacks an adequate archaeological component. The road is not likely to yield important, new information about design, construction methods, materials, or engineering that could not be

ascertained through literature review or from other existing sources. No archaeological deposits were observed during the surface inspection, and any potential subsurface deposits have likely been impacted by road construction and agricultural activity. Therefore, the JN-002 is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains some of its undeveloped and rural setting. Because it is not clear if the original surface of the road exists because it has been continually maintained by the county, it has lost some of its integrity of design, materials, workmanship, and historic feeling. Some element of the property's association with the surrounding landscape persists even though the structures fronting the roads have mostly changed through time.

Conclusion

JN-002 does not possess historical significance under any of the evaluation criteria. Chronicle Heritage recommends that the site is not eligible for inclusion in the NRHP and CRHR.

Stratton Lane

The site consists of an unpaved, gravel road that travels for 6.4 miles and varies between 10 to 16 feet wide. Two segments were recorded totaling 1.4 miles. Much of the road corridor is bound on at least one side by barbed wire fencing with the road easement approximately 35 to 40 feet in width. The first segment (Segment 1) is a two-lane graveled road that travels east from its western end at its junction with Collinsville Road for approximately 0.9 mile (Figure 7-24). The road segment (Segment 1) then narrows to a single-lane and turns south for 0.4 mile, gently curving towards the southeast, with the segment ending at the Hastings Adobe (P-48-000041), after a total of 1.3 miles. At the Hastings Adobe, an approximately 1000-foot section of the original road alignment was changed into a new alignment sometime after 1951. The second segment (Segment 2) of the original road alignment picks up 1,000 feet to the southeast at a gate (G1) at the intersection with a south traveling single-track gravel road (JN-002). Segment 2 of Stratton Lane then continues towards the east as a single-lane dirt road for 4.9 miles ending at Toland Landing. Only the western most 1000 feet of Segment 2 was recorded. The road has been well maintained with evidence of periodic grading and re-gravelling; especially, in the north/western most portion. Ground visibility was variable, ranging from 5 to 10 percent visibility along the margins of the road corridor and up to 100 percent on the road surface. Vegetation along the margins of the roadway consisted mostly of low to tall grasses and weeds, including star thistle, turkey mullein, pigweed, and blindweed. Disturbances included possible alterations to the original road alignment in sections.

The site crosses much of the Proposed API/APE. Traveling west to east from Collinsville Road and then turns south where it turns into a dirt track that turns east just north of the river and continues outside of the Proposed API/APE (Figure 1 in Attachment E). Portions of it are likely to be directly impacted by Proposed Project construction of the proposed LSPGC Collinsville Substation.



Figure 7-24. Overview of Stratton Lane, Segment 1, view east.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). Although the road may have been a serviceable pathway for local residents, no evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to link Stratton Lane to a specific event of importance in American history or to a pattern of events making a significant contribution in the development of the Solano County or California. As such, the road does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B/2 applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). This road appears on the earliest maps of the Proposed Project area (Figures 4-1 and 4-2), but it did not receive its name until after the Strattons took ownership of much of the land east of Collinsville in 1908. Since the Stratton family owned the land until

1963, it was given the name sometime during this period. It is clear that the family had no role in the construction of the road since the road existed prior to their arrival to the area. The local histories were consulted for this Proposed Project (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report), and websites such as Ancestry.com and Newspapers.com were searched for additional information on the Strattons, but no additionally information other than what has been previously discussed (see site AG-001 discussion) could be found. No additional information was found that would suggest that this road consisted of a significant contribution to the history of Solano County or California. Although the road may have some connection to the Stratton family beyond their name being attached to it, this connection cannot be determined. Stratton Lane is maintained by Solano County and is not associated with any single individual. The field identification effort for this Proposed Project did not identify associations with the portion of Stratton Lane that intersects the Proposed API/APE. Stratton Lane is, therefore, not found to be historically significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. Stratton Lane exhibits common features of roads found throughout rural and urban areas and does not exhibit significance in relation to road construction (Brookshear 2013). Stratton Lane consists of an unpaved gravel road that was constructed with standard materials, methods, and techniques for basic utilitarian use. No evidence demonstrating significance related to a type, period, or method of construction was observed during the field identification effort for this Proposed Project. As such, Stratton Lane does not possess historical significance under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). Although the roads may be associated with early settlement, the site lacks an adequate archaeological component. Stratton Lane is not likely to yield important, new information about design, construction methods, materials, or engineering that could not be ascertained through literature review or from other existing sources. No archaeological deposits were observed during the surface inspection, and any potential subsurface deposits have likely been impacted by road construction and agricultural activity. Therefore, Stratton Lane is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains some of its undeveloped and rural setting. Because it is not clear if the original surface of the road exists because they have been continually maintained by the county, it has lost some of its integrity of design, materials, workmanship, and historic feeling. Some element of the property's association with the surrounding landscape persists even though the structures fronting the roads have mostly changed through time.

Conclusion

Stratton Lane does not possess historical significance under any of the evaluation criteria. Chronicle Heritage recommends that the site is not eligible for inclusion in the NRHP and CRHR.

JN-004

The site consists of four (n=4) powerline poles (Features P1, P2, P3, and P4)(Figure 7-25). Three of the power poles are positioned along the west margins of Stratton Lane. The southern termination of the recorded powerline is located at a cut power transmission pole (P1), which once provided power to a residential structure (site JN-001) dating to between 1957 and 1965. The power pole is approximately 24 inches in diameter at the cut, and the cut is approximately 28 to 36 inches above the ground surface. A second power transmission pole (P2) was identified along the west margin of Stratton Road approximately 1,500 feet to the north of P1. The pole is positioned south of where an east to west draining modern culvert crosses Stratton Lane 30 feet to the north of the pole. Pole P2 is largely complete and is approximately 20 feet tall and 18 to 24 inches in diameter with an intact, galvanized steel guy wire anchored 8 feet to the southwest of the pole. Power pole P3 is located approximately 500 feet to the north of P2 and is positioned on a slope north of the same drainage and approximately 30 feet west of Stratton Lane. The main pole of P3 is largely intact but exhibits signs of burning/fire damage that possibly resulted from a lightning strike, surrounding fire, or electrical damage. Pole P3 is approx. 20 feet tall and varies in diameter from 18-24 inches. Whole and broken ceramic insulators, metal attachment hardware and 2- by 4-inch wood cross beams were identified approximately 5 to 10 feet northeast of P3. Pole P4 is located at the northwest corner of the junction of Stratton Lane and an unnamed dirt road that travels west from Stratton Lane. Power pole P4 is cut approximately 30 to 36 inches above the ground surface and is approximately 20 to 24 inches in diameter.

Ground visibility was variable, ranging from 5 to 10 percent visibility at poles P2, P3 and P4, with up to 100 percent at P1. Vegetation around the pole locations consisted mostly of low to tall grasses and weeds, including star thistle, turkey mullein, pigweed, and blindweed. Disturbances included possible fire alterations.

The site is in the Proposed API/APE along Stratton Lane just south of the proposed 230 kV transmission line towers 1/2 and 1/3 (Figure 1 in Attachment E; Figure 1-10). Portions of it are likely to be directly impacted by Proposed Project construction of the proposed LSPGC Collinsville Substation.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). Although the powerline may have been a necessary utility for the residents of house JN-001 (see JN-001 evaluation), no evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to link this local powerline to a specific event of importance in American history or to a pattern of events making a significant contribution in the development of the Solano County or California. As such, the

powerline does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.



Figure 7-25. View of Pole P2 with P3 to north, facing northwest.

Significance Evaluation

Criterion A/1: Associated with events that have made a significant contribution to the broad patterns of our history.

Evaluation as eligible for NRHP listing under criterion A/1 requires the property to be associated with either (or both) of two types of events: (1) a specific event marking an important moment in American prehistory or history and (2) a pattern of events or a historic trend that made a significant contribution to the development of a community, a State, or the nation (NPS 1995). Although the powerline may have been a necessary utility for the residents of house JN-001 (see JN-001 evaluation), no evidence was found in local histories, Ancestry.com, or Newspapers.com during the preparation of Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report to link this local powerline to a specific event of importance in American history or to a pattern of events making a significant contribution in the development of the Solano County or California. As such, the powerline does not meet the threshold for historical significance under NRHP Criterion A or CRHR Criterion 1.

Criterion B/2: Associated with the lives of persons significant in our past.

Criterion B applies to properties associated with individuals whose specific contributions to history can be identified and documented (NPS 1995). This site dates to the later part of the ownership of the land by the Stratton family, who owned the land from 1908 until 1963 when the land was sold to PG&E (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report). The powerline is most likely associated with the structure that was

recorded as JN-001 and dates from the later period of Stratton land ownership. The local histories were consulted for this Proposed Project (see Section 3.4.3, the historical era overview, and Section 5.2, the archival research results discussion, of this report), and websites such as Ancestry.com and Newspapers.com were searched for additional information on the Strattons other than what was previously described in the AG-001 evaluation. No additional information was found that would suggest that the Strattons made significant contributions to the history of Solano County or California. Although the site may have some connection to the later period of Stratton ownership, the connection with the family and their land cannot be determined. The powerline is not associated with any single individual. The field identification effort for this Proposed Project did not identify residents of the house JN-001 that appears to have been served by the powerline. The powerline is, therefore, not found to be historically significant under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

This criterion applies to the physical design or construction of the property, including such elements as architecture, landscape architecture, engineering, and artwork (NPS 1995). This property does not embody distinctive characteristics of a type, period, or method of construction. It does not represent the work of a master. It does not possess high artistic value. The powerline consists of standard wooden poles that carry powerlines to residential locations. These are common features of residential structures in both rural and urban areas, and the features do not exhibit significance in relation to the development of power in the area. The powerline was constructed with standard materials, methods, and techniques for basic utilitarian use. No evidence demonstrating significance related to a type, period, or method of construction was observed during the field identification effort for this Proposed Project. As such, the powerline does not possess historical significance under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: Yielded, or may be likely to yield, information important in prehistory or history.

Under this criterion the property must have the potential to answer, in whole or in part, the questions posed in the research design (NPS 1995). The powerline appears to be associated with a small mid-20th century residence. It lacks an adequate archaeological component. The powerline is not likely to yield important, new information about design, construction methods, materials, or engineering that could not be ascertained through literature review or from other existing sources. No archaeological deposits were observed during the surface inspection, and any potential subsurface deposits likely do not exist. Therefore, the powerline is not significant under NRHP Criterion D or CRHR Criterion 4.

Integrity

Integrity is based on significance: why, where, and when a property is important. Only after significance is fully established can you proceed to the issue of integrity (NPS 1995). However, a brief statement regarding the integrity of the site can be made. The property is still in its original location, which retains some of its undeveloped and rural setting. Because the powerline has largely been dismantled, it has lost some of its integrity of design, materials, workmanship, and historic feeling. Some element of the property's association with the surrounding landscape persists.

Conclusion

The site does not possess historical significance under any of the evaluation criteria. Chronicle Heritage recommends that the site is not eligible for inclusion in the NRHP and CRHR.

Supplemental Evaluation

As described previously, ASM Affiliates conducted a supplemental records search in February 2025. The results of that search identified on unevaluated historic-era site is partially located in the API/APE. Attachment H provides more details on this unevaluated historic-era site, including an evaluation of potential impacts and a significance evaluation.

Discussion and Interpretation

Precontact Archaeology in the Proposed API/APE

No intact precontact archaeological deposits were discovered in the Proposed Project survey area or Proposed API/APE during the archaeological survey for the Proposed Project. However, there is some evidence that precontact activity did in fact occur within the Proposed API/APE. When the archaeological site P-48-000041 was originally recorded, it was reported that there had been a precontact campsite near the Hastings Adobe on a small knoll that contained some projectile points (Elsasser 1956). Even at that time, the deposit had mostly been destroyed either through looting or erosion, and Elsasser reports the area had been covered with sand. It is unclear if any of this deposit remains buried on site or not. The only other evidence of precontact use of the area was the discovery of an isolated obsidian biface as part of site P-48-000139.

These finds show that the area was used by precontact peoples. However, due to the meager finds, very little can be learned about the precontact people of this area. It is not surprising that they were making use of the areas along the river where natural resources could be found, especially food sources such as fish, water plants, etc. Unfortunately, no evidence of the specific resources was found during Proposed Project investigations. The presence of obsidian shows some contact with obsidian sources either through trade or travel to these areas such as those in Napa Valley or the eastern Sierras.

Historic-era Archaeology in the Proposed API/APE

Historic-era sites identified during the archaeological survey include eleven sites associated with ranching and homesteading, three sites containing roads, one site containing a railroad spur, and one site containing two transmission lines. Both the railroad spur (AG-002) that serviced the Pittsburg Substation and the transmission lines (P-07-002956) are part of the development of the electric grid that was expanded after WWII to service the growing urbanization of the wider Bay Area. Two sites (P-48-000981 and JN-002) are the roadways that were established in and around the Collinsville area as part of the development of ranching and other light industries (e.g., fishing and canning), and the sporadic residential development of the area. Eleven sites (P-48-000041, P-48-000124, P-48-000125, P-48-000128, P-48-000139, P-48-000140, P-48-000416, P-48-000521, AG-001, JN-001, and JN-004) are associated with ranching or homesteading. Of the sixteen sites, only P-07-002956, the Contra Costa-Moraga/Pittsburg-Tesla PG&E Electrical Transmission Lines, is recommended as eligible for the CRHR because of its association with the development of the electric grid in California.

The archaeological record in the Proposed API/APE contributes evidence of primarily ranching. Even though the ranching and homesteading sites are not being recommended as eligible for the CRHR, they still offer some information for addressing research questions about the ranching and homesteading use of the Proposed API/APE. This is especially true of the Hastings Adobe (P-48-

000041) which was the first ranch house built in the area in the hopes of attracting Mormon settlers. Because of the Bear Flag Rebellion in 1846, the plan to settle Mormon immigrants in the area was abandoned. The attempted establishment of a Mormon settlement here showed that the area was considered a good location for a settlement due to the proximity to the river and the abundant grasslands available for grazing cattle.

Most of the other historic ranching features in the Proposed API/APE have been destroyed by subsequent use of the area for agriculture and wind power. These features include foundations, fence lines, ditches, reservoirs, structures such as corrals, and associated refuse. They still are indications of the use of the Proposed API/APE for raising and herding livestock. The use of corrals indicates that livestock were round up and held to be managed in some way, such as branding, doctoring, or shipping to market.

The sites with evidence of water conveyance and storage, such as stock tanks, are directly related to providing water to herds. No substantial evidence of water management was discovered during the archaeological survey. This sort of activity is characterized by dams, spring boxes, large ditches fed by river water, or wells that were dug to the aquifer to provide water in concert with windmills. From the findings of the survey, only one water well was identified: a well was identified on P-48-000125, but it was outfitted with a modern water pump so the age of the well could not be determined, and it was unclear if the well was ever associated with a windmill. So, the research question regarding water maintenance in the area could not be addressed fully by the extant ranch features.

Regarding the research question about whether the roads are associated with ranching in the area, there is no direct evidence that the roads were developed specifically as part of ranch operations. A segment of Stratton Lane (JN-002) that ended at the adobe house may mark a portion of an original track into the area. The other roads provide access into the Proposed API/APE and were potentially used to access many of the home sites there and were not developed as part of the ranching industry.

There is no discernible relationship of the ranching features to the railroads and transmission lines present in the Proposed API/APE. The railroad spur (AG-002) and the transmission lines (P-7-002956) are both associated with the Pittsburg Substation and date to the expansion of the electric grid after WWII.

All of the artifact scatters found at the various ranch or house sites were highly disturbed and contained almost no diagnostic elements. Those that contained diagnostic elements appear to be mid-20th century or later. The artifact scatters offer little information about the household members who lived in these residences and are not useful for addressing any of the questions presented in the research design. The most that can be said is that they appear to be typical domestic items such as tableware, ceramic, glassware, and other household items. In addition, none of the resources identified during the survey warrant discussion of additional research topics not included in the research design.

Summary and Recommendations

Chronicle Heritage completed a records search, literature review, Native American consultation, terrestrial archaeological survey, resource evaluations, and maritime submerged survey in support of the Collinsville 500/230 kV Substation Project in Contra Costa, Solano, and Sacramento counties, California. This cultural resources assessment resulted in the identification six new sites: AG-001, a historic-period artifact scatter; AG-002, a spur of the Burlington Northern Santa Fe Railway; JN-001, a small historic domestic structure; JN-002, an unpaved, single-lane road; Stratton Lane, a partially

paved and partially unpaved, gravel road; and JN-004, four powerline poles marking a historic powerline. Additionally, ten previously recorded resources were updated as part of the cultural resource assessment, including six within the Proposed API/APE and two adjacent to the Proposed API/APE. Only P-07-002956 of the sixteen new or previously recorded cultural resources within or adjacent to the Proposed API/APE is recommended eligible for the NRHP or the CRHR. Chronicle Heritage recommends that the Proposed Project will not adversely affect the NRHP-nominated property (P-48-000041) adjacent to the Proposed API/APE.

Inadvertent Discoveries

There is potential for the discovery of unanticipated archaeological materials during Proposed Project-related ground disturbance, such as clearing, grading, excavation, and/or general construction within the Proposed API/APE. Work at the location of the find will halt immediately within 50 feet of the find. If an archaeologist is not present at the time of the discovery, then the applicant shall contact an archaeologist for evaluation of the find to determine whether it qualifies as significant under CEQA.

- If the find is determined not to be a unique archaeological resource (or significant under CEQA), construction can continue. The archaeologist will prepare a brief informal memorandum/letter that describes and assesses the significance of the resource, including a discussion of the methods used to determine the significance of the find.
- If the find appears to be significant and qualifies as a unique archaeological resource (or significant under CEQA), the archaeologist will determine if the resource can be avoided and will detail avoidance procedures in a formal memorandum/letter.
- If the resource cannot be avoided, the archaeologist shall develop an action plan to avoid or minimize impacts. The field crew shall not proceed until a Secretary of the Interior-qualified archaeologist approves the action plan. The action plan shall be in conformance with California PRC 21083.2.

Inadvertent Discovery of Human Remains

Although unlikely, unanticipated human remains, including those interred outside formal cemeteries, may be encountered during Project ground disturbance in many locations throughout California. Section 7050.5(b) of the California Health and Safety Code will be implemented if human remains, or possible human remains, are located during Proposed Project-related construction excavation. Section 7050.5(b) states:

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to their authorized representative, in the manner provided in PRC Section 5097.98.

Upon recognizing the remains as being of Native American origin, the Contra Costa, Solano, or Sacramento County Coroner(s) will contact the NAHC within 24 hours. Once NAHC identifies the most likely descendant/s, the descendants will make recommendations regarding proper burial, which will be implemented in accordance with Section 15064.5(e) of the CEQA Guidelines. All actions taken under this mitigation measure shall comply with Health and Human Safety Code § 7050.5(b).

Preparer Qualifications

Chronicle Heritage Senior Archaeologist and Project Manager Maximilian van Rensselaer meets the Secretary of the Interior's professional qualification standards for Archaeology and has more than nine years of experience supervising and conducting cultural resource investigations, authoring and editing cultural resource reports, and managing field and office staff in multiple states. He is skilled in conducting cultural resource investigations for CEQA, Section 106 of the NHPA, and National Environmental Policy Act desktop analysis.

Chronicle Heritage Senior Archaeologist and Project Manager Allen Estes meets the Secretary of the Interior's professional qualification standards for Archaeology and has more than 25 years of experience supervising archaeological projects, including the management of surveys, excavation, construction monitoring, artifact analysis, curation, and technical reporting. He has guided clients through CEQA compliance for issues pertaining to cultural resources and has worked on projects under the oversight of local and state agencies such as the City and County of San Francisco Planning Department, Caltrans, and San Francisco Public Utilities Commission.

Chronicle Heritage Associate Archaeologist and Lab Director Rachael Irwin earned a Bachelor of Arts in Anthropology from California State University, Chico, and has more than five years of experience conducting archaeological survey, excavation, and laboratory analysis. She is skilled in Native American consultation and coordination, identification of human remains, and macrobotanical analysis.

Chronicle Heritage Associate Archaeologist Ashley Garrett possesses a Bachelor of Arts in Anthropology and has eight years of experience conducting archaeological field studies, supervising field crews, and processing artifacts for curation across Northern California and Washington state. She also has two years of experience in conducting background research for cultural resource investigations and writing cultural resource reports for both the CEQA and Section 106 of the NHPA. She is skilled in team leadership, project coordination, and implementing cultural resource protection measures for CEQA and Section 106 projects.

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**Attachment A.
Maritime Cultural Resources
Assessment Report**



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HERITAGE

Submerged Cultural Resources Assessment Survey, Collinsville 500/230 kV Substation Project, Solano, Sacramento, and Contra Costa Counties, California

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Justin Milewski, B.A.

October 2025



Submerged Cultural Resources Assessment Survey for the 500/230kV Substation Project, Solano, Sacramento, and Contra Costa Counties, California

This report has been revised for public use by removal of site location information.

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October 2025

Abstract

Conducted under contract to Insignia Environmental, PaleoWest, LLC dba Chronicle Heritage completed a Cultural Resource Assessment supporting LS Power Grid California, LLC's (LSPGC's) Proposed Collinsville 500/230 kV Substation Project (Proposed Project) in the Sacramento River Delta region of Contra Costa, Solano, and Sacramento counties in California. The Proposed Project involves constructing a new electrical substation, 500 kilovolt (kV) transmission line, and 230 kV transmission line to increase reliability and renewable generation. The proposed 230 kV transmission line extends from the proposed Collinsville Substation near Collinsville, California to PG&E's existing Pittsburg Substation in Pittsburg, California and includes aboveground and underwater components.

Required to meet stipulations of Section 404 of the Clean Water Act, the Proposed Project is subject to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, the Abandoned Shipwreck Act of 1987 (National Park Service [NPS] 1990), and the California Environmental Quality Act (CEQA), and the Abandoned Shipwreck Act of 1987. The U.S. Army Corps of Engineers (USACE) is the lead federal agency, and the California Public Utilities Commission (CPUC) is the lead CEQA agency.

The Proposed Area of Potential Impact (API) or Area of Potential Effect (APE) includes an approximately 4.5-mile (mi)-long stretch of submerged transmission cables under the Sacramento River, in addition to approximately 1 mi of overhead 230 kV transmission line, and two approximately 1.2-mi-long, single-circuit, 500 kV transmission line segments. For the submerged portion of the Proposed Project, Chronicle Heritage's Maritime Division analyzed data from an intensive submerged geophysical remote sensing survey; coordinated with the State of California's Underwater Archaeologist; performed a literature review and archival research; and performed an analysis of magnetometer, side-scan sonar, and subbottom profiler data collected during the survey.

Fieldwork was conducted by eTrac from September 17 to October 26, 2023, and was conducted under California State Lands Commission (CSLC) Low Energy Geophysical Survey Permit No. 9235. Analysis of the data indicated the presence of three potentially significant targets. Target 1 and Target 2 contained vessel-like structural components, and Target 3 is believed to represent the remains of a wooden barge-like watercraft. Located over 100 feet away from the actual cable lays, all Targets will be avoided by Proposed Project activities which will preclude and mitigate any potential adverse effect.

In addition, one paleolandform was identified within the Proposed API/APE. While this feature was initially thought to cross seven survey transects through and into the Proposed API/APE, upon closer analysis each cross section differed markedly from the other, indicating a noncontinuous landform with separate and independent features. This argues that what is represented by the subbottom record is a braided network of constantly changing and shifting river channels. Subsequently, the dynamic nature of this area also argues for a low probability of the potential for intact cultural material deposits.

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1 Introduction

PaleoWest, LLC dba Chronicle Heritage completed a records search, literature review, Native American outreach, terrestrial archaeological survey, resource evaluations, and maritime submerged survey in support of the Collinsville 500/230 kilovolt (kV) Substation Project (Proposed Project) in Contra Costa, Solano, and Sacramento counties, California (Figure 1-1). This report presents the results of the records search, a review of historical maps and aerial photographs, and maritime submerged cultural resources survey results. Required to meet stipulations of Section 404 of the Clean Water Act, the Proposed Project is subject to compliance with the National Historic Preservation Act (NHPA) and the California Environmental Quality Act (CEQA). The U.S. Army Corps of Engineers is the lead federal agency, and the California Public Utilities Commission (CPUC) is the lead CEQA agency. The purpose of this investigation is to determine the potential for the Proposed Project to adversely affect historical resources under the NHPA and CEQA.

1.1 Project Description

The Area of Potential Impact is in Sections 22–24 and 26–27 of Township 3 North, Range 1 East in the Antioch North, California (USGS 1978) and Honker Bay, California (USGS 1981) U.S. Geological System (USGS) 7.5-minute quadrangles (Figure 1-2 and Figure 1-3). The Proposed Collinsville Substation will provide an additional supply from the 500 kV system into the northern Greater Bay Area, which will increase reliability and advance additional renewable generation. The Proposed Project has an in-service date requirement of June 1, 2028, per the California Independent System Operator (CAISO) functional specification.

The Proposed Project involves the following main components:

- The construction of the proposed 500/230 kV Collinsville Substation,
- The installation of the new double-circuit 230 kV line from the Proposed Collinsville Substation to Pacific Gas and Electric Company's (PG&E's) existing Pittsburg Substation
- The construction of a new 500 kV interconnection between PG&E's existing Vaca Dixon–Tesla 500 kV transmission line and the Proposed Collinsville Substation with possible adjustment to existing series capacitors at the Vaca Dixon Substation (PG&E scope)
- The extension and connection of an existing PG&E 12 kV distribution line to the LSPGC Collinsville Substation.
- The construction of two new telecommunications paths to the LSPGC Collinsville Substation—a new microwave tower would be constructed at the substation and a new fiber optic line would be installed between existing fiber in the City of Pittsburg and the substation.¹
- Constructing three new PG&E 500 kV transposition structures, removing two existing lattice steel poles (LSPs), and replacing two existing lattice steel towers with two new

¹ The microwave tower would be constructed, operated, and maintained by PG&E.

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three-pole dead-end tubular steel poles along PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line.²

The Proposed Collinsville Substation will be approximately 11 acres and is off Stratton Lane near Collinsville, approximately 1 mile (mi) north of the Sacramento River Delta. The Proposed Collinsville Substation is designed to be expandable to accommodate a total of eight 500 kV positions in four bays and ten 230 kV positions in five bays, based on the CAISO's functional specification. The Proposed Project will establish a new access road to the Proposed Collinsville Substation site.

The PG&E 500 kV Interconnection segments are each proposed to be approximately 1.2-miles long. Structures would be up to 155-feet tall and reach depths of up to 40 feet. The 500 kV interconnection ROW is planned to be 150 to 350 feet wide.

PG&E would extend and connect an existing PG&E 12 kV distribution line approximately 0.9 mile to the LSPGC Collinsville Substation. Approximately twenty-one wood poles would be installed to carry the line. Pole installation would cause a disturbance measuring 3 to 4 feet in diameter and 6 to 10 feet in depth.

The new Collinsville to Pittsburg double-circuit 230 kV transmission line will be a combination of overhead, submarine, and underground components. The overhead transmission line is proposed to be approximately 1 mi long between the Proposed Collinsville Substation and the northern edge of the Sacramento River. The overhead transmission line structures will be predominantly self-supporting, double-circuit tubular steel poles with a vertical conductor configuration and two optical ground wires. Structures are proposed to be approximately 70-150 feet (ft) tall. The overhead transmission line right-of-way (ROW) is planned to be approximately 100-230 feet wide.

The submarine cable route is proposed to be approximately 4.5 mi long, running northeast-southwest across the Sacramento River Delta. Subject to detailed engineering, the submarine cable conductor is proposed to consist of up to six 230 kV tri-core cables, each spaced approximately 70 feet apart. The submarine cable is proposed to be installed beneath the bay and riverbed to a depth of approximately 6 and 15 feet using jetting technology. Jet sled installation has short-term, localized impacts within the river and will cause minimal disturbance to the environment and navigation. At the north shore, along each cable path a trench would be excavated from the shoreline to a point approximately 50 feet waterward of the mean high-water line. The cables would be installed below ground between the Delta's northern shoreline and two proposed onshore riser structures, a distance of approximately 250 feet. It is anticipated that each trench between the northern shoreline and the overhead riser structures would be approximately 5 feet wide and up to approximately 5 feet deep. Near the southern edge of the river, just outside of PG&E's existing Pittsburg Substation, an onshore underground utility vault will receive the submarine cables. Trenching would be required between the underground utility vault and the mean high-water line (approximately 70 to 80 feet) and may also be required up to approximately 30 feet waterward of the mean high water line. It is anticipated that each trench between the southern shoreline and the underground utility vault, would be approximately 5 feet wide and up to approximately 5 feet deep. From the underground utility vault, the lines will continue underground

² A supplemental cultural resources survey was conducted by ASM Affiliates in April 2025 covering the transposition structure locations. Those features do not have a maritime component and are not discussed further in this document.

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for approximately 0.3 mile until terminating at two new riser structures adjacent to PG&E's existing Pittsburg Substation.

LSPGC's scope for the new 230 kV lines is proposed to stop at the proposed riser structures near PG&E's existing Pittsburg Substation property line. PG&E will be responsible for bringing the new circuits from that point to the terminations within the Pittsburg Substation, the final configuration of which will be determined and established in the Transmission Interconnection Agreement with PG&E. At the opposite end of the Proposed Project, PG&E will also be responsible for interconnecting the Vaca Dixon–Tesla 500 kV line to terminate at new dead-end structures near the Proposed Collinsville Substation and to provide any required modifications to the existing series capacitors at Vaca Dixon.

The two new telecommunication paths would be installed by their owners (e.g., AT&T, Comcast) generally within existing streets using the horizontal directional drilling (HDD) method of construction from a residential neighborhood located east of PG&E's existing Pittsburg Substation to a new fiber hub installed adjacent to PG&E's existing Pittsburg Substation and the new onshore underground utility vault associated with the LSPGC 230 kV Underground Segment.

Construction of the Proposed Project is planned to begin in 2026 after necessary permits, agreements, and land rights are received. The construction phase of the Proposed Project is anticipated to be approximately 24–30 months, concluding with the energization of the new Project facilities.

1.2 Area of Potential Impacts

As mentioned above, the submarine cable route is proposed to be approximately 4.5 mi long, running northeast-to-southwest across the Sacramento River Delta. The submarine cable corridor, which is the actual Area of Potential Impact (API) or Area of Potential Effect (APE), is proposed to be installed beneath the bay and riverbed to a depth of approximately 6 and 15 feet using jetting technology.

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Figure 1-1. Submerged and terrestrial Project vicinity map.

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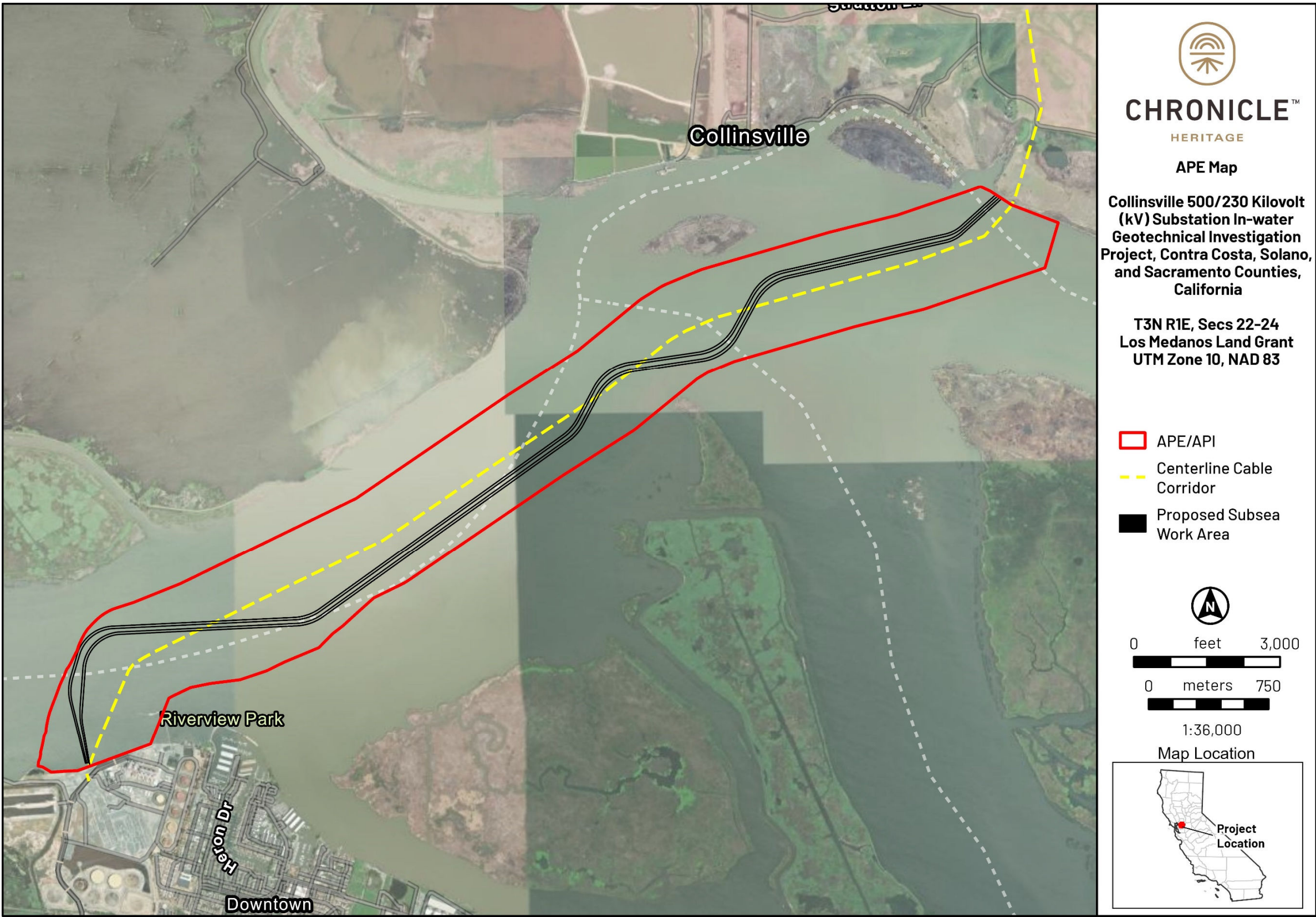


Figure 1-2. Proposed submerged API/APE with centerline cable corridors and proposed subsea cables.

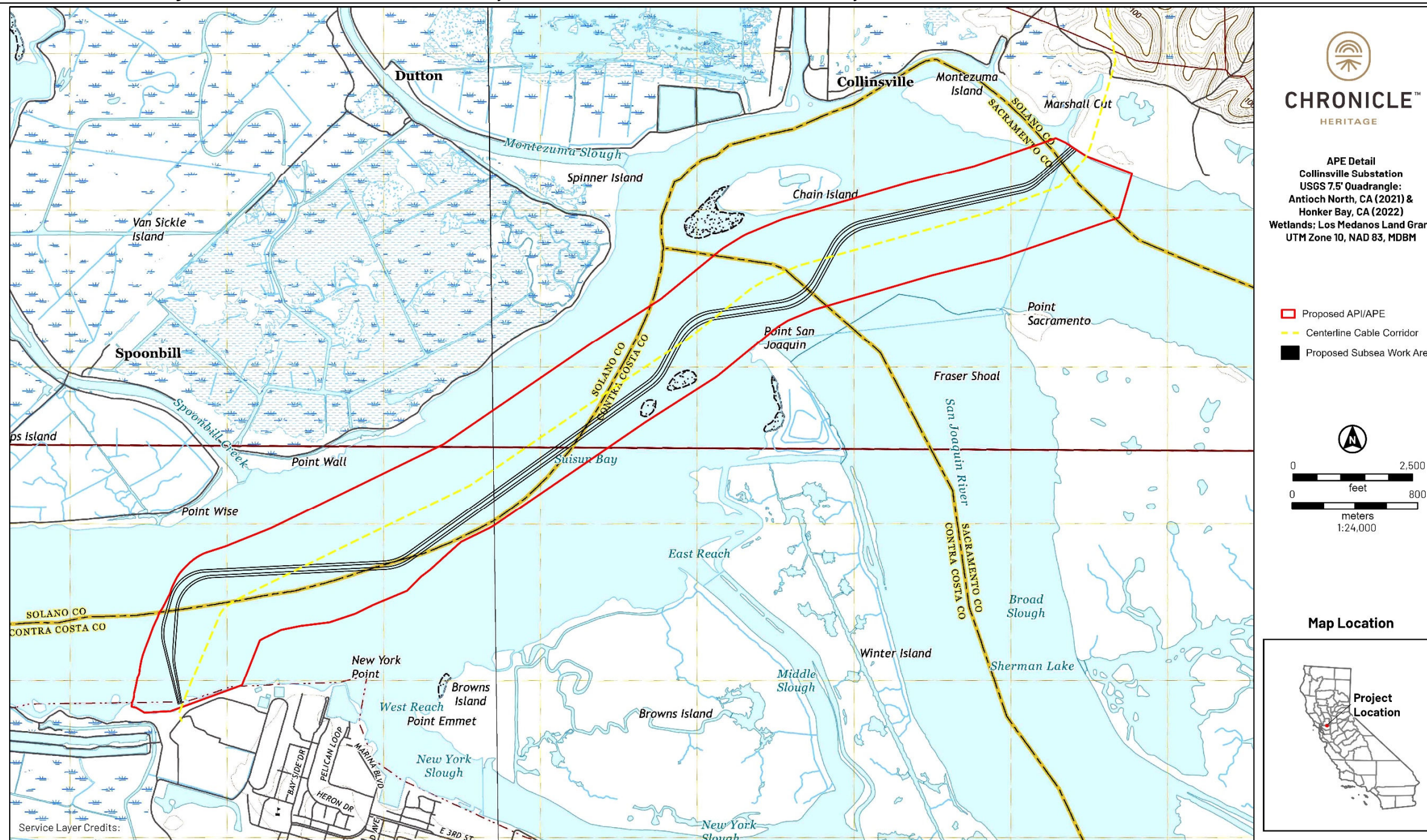


Figure 1-3. Proposed submerged API/APE with centerline cable corridors and proposed subsea cables detailed map.

2 Regulatory Context

2.1 Federal

2.1.1 National Historic Preservation Act

The NHPA of 1966, as amended (54 United States Code [USC] 300101 et seq.), sets forth the responsibilities that federal agencies must meet regarding cultural resources, especially Section 106 and its implementing regulations in 36 Code of Federal Regulations (CFR) Part 800. Federal agencies must conduct the necessary studies and consultations to identify cultural resources that may be affected by an undertaking and evaluate cultural resources that may be affected to determine if they are eligible for the National Register of Historic Places (NRHP) (that is, whether identified resources constitute historic properties), and assess the potential for effects (adverse or not) to historic properties associated with the proposed undertaking. Historic properties are resources that are listed on or eligible for listing in the NRHP (36 CFR 800.16[1][1]). A property may be listed in the NRHP if it meets the criteria provided in the NRHP regulations (36 CFR 60.4). Typically, such properties must also be 50 years or older (36 CFR 60.4[d]).

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet at least one of the four following Criteria:

- That are associated with events that have made a significant contribution to the broad patterns of our history (Criterion A)
- That are associated with the lives of persons significant in our past (Criterion B)
- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C)
- That have yielded, or may be likely to yield, information important in prehistory or history (Criterion D)

Section 106 defines an adverse effect as an effect that alters, directly or indirectly, the qualities that make a resource eligible for listing in the NRHP (36 CFR 800.5[a][1]). Consideration must be given to the property's location, design, setting, materials, workmanship, feeling, and association to the extent that these qualities contribute to the integrity and significance of the resource. Adverse effects may be direct and reasonably foreseeable or may be more remote in time or distance (36 CFR 8010.5[a][1]).

2.1.2 Abandoned Shipwreck Act

Signed into law in 1988, the Abandoned Shipwreck Act of 1987 (Act; 43 U.S.C. §§ 2101 through 2106) provides that any abandoned shipwreck embedded in a state's submerged lands, or that is located on a state's submerged lands and is included in or determined eligible for inclusion in the National Register, is the property of that state and subject to that state's jurisdiction. Under California

Public Resources Code section 6313(a), abandoned shipwrecks are under the jurisdiction of the California State Lands Commission

2.2 State

2.2.1 California Public Resources Code 5097.9

§ 5097.9 – Interference with Native American religion or damage to cemeteries or places of worship, etc., prohibited, construction and exemptions from law.

No public agency, and no private party using or occupying public property, or operating on public property, under a public license, permit, grant, lease, or contract made on or after July 1, 1977, shall in any manner whatsoever interfere with the free expression or exercise of Native American religion as provided in the United States Constitution and the California Constitution; nor shall any such agency or party cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, except on a clear and convincing showing that the public interest and necessity so require.

§ 5097.91 – Native American Heritage Commission

There is in state government a Native American Heritage Commission (NAHC), consisting of nine members appointed by the Governor with the advice and consent of the Senate.

§ 5097.94 – Powers and duties

This section discusses the powers and duties of the NAHC. These powers and duties include:

- (a) To identify and catalog places of special religious or social significance to Native Americans and known graves and cemeteries of Native American on private lands, notifying landowners whose property contains Native American graves and cemeteries and identifying the most likely descendant.
- (b) To make recommendations relative to Native American sacred places that are located on private lands, are inaccessible to Native Americans, and have cultural significance to Native Americans for acquisition by the state or other public agencies for the purpose of facilitating or assuring access thereto by Native Americans.
- (c) To make recommendations to the Legislature relative to procedures which will voluntarily encourage private property owners to preserve and protect sacred places in a natural state and to allow appropriate access to Native American religionists for ceremonial or spiritual activities.
- (d) To make recommendations to the Director of Parks and Recreation and the California Arts Council relative to the California State Indian Museum and other Indian matters touched upon by department programs.
- (e) To assist Native Americans in obtaining appropriate access to sacred places that are located on public lands for ceremonial or spiritual activities.

- (f) To assist state agencies in any negotiations with agencies of the federal government for the protection of Native American sacred places that are located on federal lands.

§ 5097.98 – Notification of discovery of Native American human remains, descendants; disposition of human remains and associated grave goods.

This section discusses the procedures that need to be followed upon the discovery of Native American human remains. The NAHC, upon notification of the discovery of human remains, is required to contact the County Coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code and shall immediately notify those persons it believes to be most likely descended from the deceased Native American.

Upon the discovery of the Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed.

2.2.2 California Environmental Quality Act

The Proposed Project is subject to compliance with CEQA, as amended. Compliance with CEQA statutes and guidelines requires both public and private projects with financing or approval from a public agency to assess the undertaking's impact on cultural resources (Public Resources Code [PRC] Section 21082, 21083.2 and 21084 and California Code of Regulations 10564.5). Specifically, under PRC Section 21084.1, a, "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." The first step in the CEQA compliance process in terms of historical resources is to identify any that may be impacted by the Proposed Project.

Cultural resources are buildings, sites, human-modified landscaped areas, traditional cultural properties, structures, or objects that may have historical, architectural, cultural, or scientific importance based on established criteria. CEQA states that if a project will have a significant impact on important cultural resources deemed "historically significant," then project alternatives and mitigation measures must be considered.

"Historical resource" is a term with a defined statutory meaning (PRC Section 21084.1). The determination of significant impacts on historical and archaeological resources is described in Sections 15064.5(a) and 15064.5(b) of the State CEQA Guidelines. Section 15064.5(a) states that historical resources include the following:

- A resource listed or determined to be eligible by the State Historical Resources Commission for listing, in the California Register of Historical Resources (CRHR) (PRC Section 5024.1).
- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the PRC or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the PRC, will be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

- 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 may be considered a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource will be considered by the lead agency to be historically significant if the resource meets the criteria for listing in the CRHR (PRC Section 5024.1).
- The fact that a resource is not listed in or determined to be eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to PRC Section 5020.1[k]) or identified in a historical resources survey (meeting the criteria in PRC Section 5024.1[g]) does not preclude a lead agency from determining that the resource may be an historical resource as defined in PRC Section 5020.1(j) or 5024.1.

2.3 Local

2.3.1 Solano County

The Solano County General Plan (Solano County 2008) offers goals, policies, and implementation programs to guide the preservation of prehistoric and historic archaeological sites in Solano County. The county's stated cultural resource goals include (1) collaboration with Native American groups to protect traditional cultural places and sacred spaces in the context of land use decisions and (2) leveraging the county's historic capital to drive economic development, especially tourism.

The policies related to cultural resources outlined by the Solano County General Plan include the following:

- RS.P-38. Identify and preserve important prehistoric and historic structures, features, and communities.
- RS.P-39. Tie historic preservation efforts to the County's economic development pursuits, particularly those relating to tourism.
- RS.P-40. Consult with Native American governments to identify and consider Native American cultural places in land use planning.

In pursuit of its cultural resource goals, Solano County designed an implementation program and possible mitigation measures in areas with medium to high potential for archaeological or cultural resources:

- RS.I-25. Require cultural resources inventories of all new development projects in areas identified with medium or high potential for archeological or cultural resources. Where a preliminary site survey finds medium to high potential for substantial archaeological remains, the County shall require a mitigation plan to protect the resource before issuance of permits. Mitigation may include:
 - Having a qualified archaeologist present during initial grading or trenching (monitoring);
 - Redesign of the project to avoid archaeological resources (this is considered the strongest tool for preserving archaeological resources);
 - Capping the site with a layer of fill; and/or

- Excavation and removal of the archaeological resources and curation in an appropriate facility under the direction of a qualified archaeologist.
- Alert applicants for permits within early settlement areas to the potential sensitivity. If significant archaeological resources are discovered during construction or grading activities, such activities shall cease in the immediate area of the find until a qualified archaeologist can determine the significance of the resource and recommend alternative mitigation.

2.3.2 Contra Costa County

The Contra Costa County General Plan (Contra Costa County 2010) details policies and implementation measures related to the stated goal of the identification and preservation of historic and cultural resources in Contra Costa County.

Contra Costa County's historic and cultural resource policies include:

- 9-28. Areas which have identifiable and important archaeological or historic significance shall be preserved for such uses, preferably in public ownership.
- 9-29. Buildings or structures that have visual merit and historic value shall be protected.
- 9-30. Development surrounding areas of historic significance shall have compatible and high-quality design in order to protect and enhance the historic quality of the area.
- 9-31. Within the Southeast County area, applicants for subdivision or land use permits to allow non-residential uses shall provide information to the County on the nature and extent of the archeological resources that exist in the area. The County Planning Agency shall be responsible for determining the balance between multiple use of the land and protection of resources (Contra Costa General Plan).

Contra Costa County's historic and cultural resource implantation measures include those related to the development review process, ordinance revisions, and other programs:

- Development Review Process
 - 9-i. Develop an archaeological sensitivity map to be used by staff in the environmental review process for discretionary permits to determine potential impacts upon cultural resources.
 - 9-j. As a condition of approval of discretionary permits, include a procedure to be followed in the event that archaeological resources are encountered during development or construction.

2.3.3 Sacramento County

The Sacramento County General Plan (Sacramento County 2017) provides an overarching goal related to the protection and preservation of cultural resources:

Goal: Promote the inventory, protection and interpretation of the cultural heritage of Sacramento County, including historical and archaeological settings, sites, buildings, features, artifacts and/or areas of ethnic historical, religious or socioeconomical importance.

In pursuance of that goal, the Sacramento County General Plan identifies six objectives, and policies and implementation programs to accomplish those objectives.

Objective 1: Comprehensive knowledge of archeological and historic site locations.

Implementation Measures:

A. In cooperation with the North Central Information Center (NCIC) and cultural resources professionals, conduct:

- A comprehensive survey to record location of prehistoric, ethnohistoric and historic sites.
- A comprehensive survey to identify historically and architecturally important structures.

Objective 2: Attention and care during project review and construction to ensure that cultural resource sites, either previously known or discovered on the project site, are properly protected with sensitivity to Native American values.

Policies:

CO-150. Utilize local, state and national resources, such as the NCIC, to assist in determining the need for a cultural resources survey during project review.

CO-151. Projects involving an adoption or amendment of a General Plan or Specific Plan or the designation of open space shall be noticed to all appropriate Native American tribes in order to aid in the protection of traditional tribal cultural places.

CO-152. Consultations with Native American tribes shall be handled with confidentiality and respect regarding sensitive cultural resources on traditional tribal lands.

CO-153. Refer projects with identified archeological and cultural resources to the Cultural Resources Committee to determine significance of resource and recommend appropriate means of protection and mitigation. The Committee shall coordinate with the Native American Heritage Commission in developing recommendations.

CO-154. Protection of significant prehistoric, ethnohistoric and historic sites within open space easements to ensure that these resources are preserved in situ for perpetuity.

CO-155. Native American burial sites encountered during preapproved survey or during construction shall, whenever possible, remain in situ. Excavation and reburial shall occur when in situ preservation is not possible or when the archeological significance of the site merits excavation and recording procedure. On-site reinterment shall have priority. The project developer shall provide the burden of proof that off-site reinterment is the only feasible alternative. Reinterment shall be the responsibility of local tribal representatives.

CO-156. The cost of all excavation conducted prior to completion of the project shall be the responsibility of the project developer.

CO-157. Monitor projects during construction to ensure crews follow proper reporting, safeguards, and procedures.

CO-158. As a condition of approval of discretionary permits, a procedure shall be included to cover the potential discovery of archaeological resources during development or construction.

Implementation Measures:

A. Develop a Cultural Resources Committee (appointed by the Board of Supervisors) to establish procedures and criteria for preservation and mitigation for cultural resources by utilizing information available from the Sacramento Archives and Museum Collection Center and the NCIC.

B. At the beginning of projects involving an adoption or amendment of a General Plan or Specific Plan or the designation of open space, notify the California Native American Heritage Commission and the appropriate Native American tribes regarding the project and, if requested by the tribes, set up consultation regarding the protection of traditional tribal cultural places. This notification and consultation process shall be carried out in accordance with Government Code Sections 65040.2, 65092, 65351, 65352, 65352.3, 65352.4, 65560, 65562.5; Public Resources Code Sections 5097.9, 5097.993; and Civil Code Section 815.3 and shall prevent public exposure of sensitive cultural resources.

C. Establish procedures to:

- Conduct periodic training programs for County Public Works and Infrastructure Agency and County Airports construction and maintenance personnel to facilitate their awareness of archeological site indicators and proper procedures.
- Utilize mitigation monitoring and reporting programs to provide for on-site monitoring during construction adjacent to known sites.
- Write letters during the environmental review process, to peoples of Native American descent based on a contact list provided by the Native American Heritage Commission, to request a Native American statement regarding a proposed project when that project is located on a site with known cultural resources.

D. Pursue becoming a certified local government and establish a local County registry to document and protect cultural resources that are significant to the County of Sacramento. This registry should be administered through the Cultural Resources Committee (please refer to Implementation Measure A under Archeological Site Protection During Development).

Objective 3: Preserve structures such as buildings, bridges, or other permanent structures with architectural or historical importance to maintain contributing design elements.

Policies:

CO-164. Structures having historical and architectural importance shall be preserved and protected.

CO-165. Refer projects involving structures or within districts having historical or architectural importance to the Cultural Resources Committee to recommend appropriate means of protection and mitigation.

CO-166. Development surrounding areas of historic significance shall have compatible design in order to protect and enhance the historic quality of the areas.

CO-167. When conducting planning studies, County Planning and Environmental Review staff, shall encourage the adaptive reuse of historic resources when the original use is no longer feasible or allowed under proposed area planning efforts.

CO-168. County-owned historic and cultural resources shall be preserved and maintained, such that modifications, alterations, and rehabilitations are conducted in a manner that is consistent with the U.S. Secretary of the Interiors Standards for the Treatment of Historic Properties.

Implementation Measures:

A. In cooperation with the NCIC and cultural resources professionals, conduct:

- A comprehensive survey to record location of prehistoric, ethnohistoric and historic sites.
- A comprehensive survey to identify historically and architecturally important structures.

Objective 4: Protect any known cultural resources protected from vandalism unauthorized excavation, or accidental destruction.

Policies:

CO-169. Restrict the circulation of cultural resource location information to prevent potential site vandalism. This information is exempt from the "Freedom of Information Act".

CO-170. Cooperate with other agencies to enforce laws and aggressively prosecute illegal collection of artifacts.

CO-171. Design and implement interpretive programs about known archeological or historical sites on public lands or in public facilities. Interpretation near or upon known sites should be undertaken only when adequate security is available to protect the site and its resources.

Implementation Measures:

- A. Develop a plan in conjunction with Archeological Conservancy to secure easements, agreements, or other appropriate mechanisms to protect known cultural sites from disturbance or erosion.
- B. Periodic patrol of County owned and managed archeological sites by park rangers.
- C. Implement a program within County departments which manage or patrol properties with known cultural resources to facilitate their awareness of archaeological site indicators and proper procedures in handling cultural resources.

Objective 5: Properly stored and classified artifacts for ongoing study.

Implementation Measures:

- A. Initiate discussions regarding the preparation of a comprehensive regional study design for the excavation, cataloging and analysis of cultural resource artifacts and the synthesis of available information.

B. Identify a repository for cataloging and storage of excavated cultural artifacts.

Objective 6: Increase public education, awareness and appreciation of both visible and intangible cultural resources.

Policies:

CO-172. Provide historic and cultural interpretive displays, trails, programs, living history presentations, and public access to the preserved artifacts recovered from excavations.

CO-173. Interpretive elements involving Native American cultural resources shall be located at village sites (provided any unexcavated resources are properly protected) representative of different physical environments found in the County.

CO-174. Promote and support the California Indian Heritage Center.

CO-175. The County shall support efforts to develop Cultural Resources Tourism program within the County as a tool to preserve important cultural resources and in order to encourage economic development of resources within the County.

Implementation Measures:

A. In cooperation with local cultural resources experts:

- Present educational programs to school age children.
- Design educational criteria guidelines and study units for incorporation in county school curricula.

3 Setting

3.1 Environmental Setting

The northern portion of the Proposed API/APE is within Township 3 North, Range 1 East, Sections 23, 24, 26, and 27, and the southern portion of the Proposed API/APE is within an unsectioned portion of Township 2 North Range 1 E as depicted on the USGS Antioch North 1979 and the USGS Honker Bay 2018 7.5' minute quadrangle topographic maps (USGS 1979; USGS 2018). The Public Land Survey System titles the unsectioned southern portion as the Los Medanos Land Grant. This is where the Sacramento River meets the Suisun Bay, characterized by marshland that is subject to periodic flooding.

The Proposed API/APE is situated at the confluence of the Sacramento and San Joaquin Rivers at the eastern end of Suisun Bay and the western edge of the Sacramento–San Joaquin River Delta. The Proposed API/APE extends northward into the low-lying Montezuma Hills, opposite Collinsville (Figure 3-1) and its southern point in Pittsburg is approximately 3 mi north of the California Coast Range foothills in Contra Costa County (Figure 3-2). The deep water and lack of tributaries within the Proposed API/APE is somewhat unusual, given its location at the distal edge of a major river delta. While most deltas expand outward in broad fans, the Sacramento–San Joaquin River Delta is an inverted delta that contracts with proximity to its outlet in the San Francisco Bay. The unique setting of the Proposed API/APE is a result of the region's geologic history.

Submerged Cultural Resources Assessment Survey for the Collinsville 500/230 kV Substation Project, Solano, Sacramento, and Contra Costa Counties, California

Before the San Francisco Bay began to form at the start of the Holocene 12,000 years ago, the coastline was approximately 30 mi west of its current position near the Farallon Islands due to lower sea levels during the Pleistocene. The Sacramento and San Joaquin Rivers faced a steeper gradient and cut deep and narrow channels through the Proposed API/APE as water flowed steadily toward the Pacific Ocean. Gravels found in Pleistocene deposits of the Montezuma Hills at the northern end of the Proposed API/APE and Pleistocene alluvial fans at the southern edge of the Proposed API/APE suggest a high-energy depositional environment during this time (Atwater 1982; Helley and Graymer 1998). However, once the sea level started to rise in the Holocene and the San Francisco Bay flooded, the river's gradient and energy decreased, causing it to dump its sediment load away from the ocean in what is now the Sacramento-San Joaquin River Delta. This clay-rich material is evident in the muddy marsh deposits along the bank of the Sacramento River within the Proposed API/APE (Helley and Graymer 1998). Alternating sequences of fine to coarse-grained sediments represent cycles of marine transgression and regression throughout the Pleistocene, but the most recent iteration is best represented due to the erosion, burial, or uplift of ancient low depositional energy environments (Atwater 1982).



Figure 3-1. View east of Collinsville from within the Proposed API/APE, facing north.



Figure 3-2. View from within the Proposed API/APE, facing south.

3.2 Precontact Setting

Research into local precontact cultures in northern California began with the work of N.C. Nelson of the University of California at Berkeley, who conducted the first intensive archaeological surveys of the San Francisco Bay region from 1906 to 1908. He maintained that the intensive use of shellfish—a subsistence strategy reflected in both coastal and bay shore middens—indicated a general economic unity in the region during precontact times (Moratto 1984:227). Nelson documented more than 100 shell mounds along the bay shore in Alameda and Contra Costa counties when the area was still ringed by salt marshes 3–5 mi wide (Nelson 1909:322).

In 1911, Nelson supervised excavations at CA-SFR-7 (the Crocker Mound) near Hunter's Point, a site later dated to 3000–1500 years before present (B.P.). L.L. Loud identified archaeological components from this same period in Santa Clara County in 1911 while excavating at CA-SCL-1 (the Ponce, Mayfield, or Castro Mound site). R.J. Drake recognized them in San Mateo County in 1941–1942 at CA-SMA-23 (Mills Estate) in San Bruno (Moratto 1984:233). The work of Nelson and Loud in the Bay Area provided the impetus for investigation into the prehistory of central California, which began in earnest in the 1920s. Stockton-area amateur archaeologists J.A. Barr and E.J. Dawson excavated several sites and made substantial collections in the area from 1893 to the 1930s. Based on artifact comparisons, Barr identified what he felt were two distinct cultural traditions. Dawson later refined his work into a series of "Early," "Middle," and "Late" sites (Ragir 1972; Schenck and Dawson 1929).

Professional or academic-sponsored archaeological investigations began in the 1930s when J. Lillard and W. Purves of Sacramento Junior College formed a field school, which conducted excavations throughout the Sacramento Delta area. By means of artifact and burial data, they identified a three-phase sequence like Barr's and Dawson's, which they called "Early," "Intermediate," and "Recent" cultures (Lillard and Purves 1936). In 1954, Richard Beasley refined this

system and extended it to include the region of San Francisco Bay. The result was referred to as the Central California Taxonomic System (CCTS) (Lillard et al. 1939; Moratto 1984). Subsequently, the CCTS system was applied widely to site dating and taxonomy throughout central California.

Much of the subsequent archaeological investigation in the Bay Area and Central Valley focused on refining the CCTS through an analysis of environmental change, settlement and subsistence strategy, exchange, population movement, and related topics. These studies established subsequences for many regions of central California. The best received of these studies has been Fredrickson's (1973) concept of cultural "patterns" (Moratto 1984:201-214). His idea was that, despite local variations, widespread cultural patterns are identifiable. He described patterns as "adaptive modes," which extend across one or more regions and are, "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" (Fredrickson 1973:7-8).

Fredrickson's chronological sequence for central California begins with the Windmill Pattern, which possesses cultural elements belonging to both the Early and Middle Horizons. Sites from this period date from about 6950-3950 B.P. Although earlier occupations no doubt existed, sites from the Paleoindian Period (about 11,950-7950 B.P.) are thought to be buried beneath Holocene alluvial deposits and are not well documented in this part of California (Ragir 1972). Some scholars have suggested that Windmill Pattern sites are associated with an influx of people from outside of California, who introduced subsistence patterns adapted for a riverine-wetlands environment (Moratto 1984:207).

Windmill Pattern sites are often in riverine, marshland, or valley floor settings, as well as atop small knolls above prehistoric seasonal floodplains. Such an area provided a wide variety of plant and animal resources. Most Windmill Pattern sites have contained burials with remains that are extended ventrally, oriented to the west, and that contain copious amounts of mortuary artifacts. These artifacts often include large projectile points and a variety of fishing paraphernalia: net weights, bone hooks, and spear points. The faunal remains indicate that the inhabitants hunted a range of large and small mammals. Stone mortars and grindstones for seed and nut processing are common finds. Other artifacts—such as charmstones, ochre, quartz crystals, and both *Olivella* and *Haliotis* shell beads—suggest a practice of ceremonialism and trade (Kozakavich 2017).

The subsequent Berkeley Pattern (previously included in the Middle Horizon culture) covers a period from about 3500-1500 B.P. in the San Francisco Bay region. This pattern shares some attributes with the Windmill Pattern at the beginning of the sequence and with the Late Horizon Period at the end. Berkeley Pattern sites are much more common and well documented, and therefore better understood, than Windmill Pattern sites. These sites are scattered in more diverse environmental settings, but riverine settings are prevalent.

Deeply stratified midden deposits, which developed over generations of occupation, are common to Berkeley Pattern sites. These middens contain numerous milling and grinding stones for food preparation (Kozakavich 2017). Projectile points in this pattern become progressively smaller and lighter over time, culminating in the introduction of the bow-and-arrow during the Late Horizon Period. Slate pendants, steatite beads, stone tubes, ear ornaments, and burial techniques that use variable directional orientation, flexed body positioning, and a general reduction of mortuary goods are unique to Berkeley Pattern sites (Fredrickson 1973:125-126; Moratto 1984:278-279).

The Late Prehistoric Period (formerly the Late Horizon) ranges in date from about 950-150 B.P. This period coincides with Fredrickson's Augustine Pattern, which is typified by intensive fishing,

hunting, and gathering (especially acorns); a large population increase; expanded trade and exchange networks; increased ceremonial and social attributes; and the practice of cremation in addition to flexed burials (Kozakavich 2017). Certain artifacts are also distinctive in this pattern: bone awl, bow-and-arrow use, occasional pottery, clay effigies, bone whistles, and stone pipes (Kozakavich 2017).

3.3 Ethnographic Setting

At the time of European contact, the Proposed API/APE was within the territory of the Patwin, a southern Wintun linguistic group (Kroeber 1925, 1930; Barrette 1908), and the Ompin, Bay Miwok, a western Utian linguistic group. Two analytical zones immediately surround Suisun Marsh—the Bay Area (Bay Miwok and Ohlone) and Middle Sacramento Valley (Patwin). Pre-mission populations in these regions were estimated as 2.1–4.0 persons per square mile in lands southeast of the marsh (Bay Miwok), increasing to 4.1–8.0 to the west and north (Meyer et al. 2013).

3.3.1 The Patwin People

Kroeber notes that by 1923, the southern half of the Patwin group was wholly extinct. The Patwin are members of California Penutian linguistic stock, and they occupied the southwest portion of the Sacramento Valley, from the lower hills of the eastern North Coast Ranges to the Sacramento River, from Princeton south to San Pablo and Suisun Bays and into Napa Valley as far north as Calistoga. Kroeber (1970) states that prior to contact, the Patwin totaled nearly 12,000 individuals. Kroeber noted that there were permanent habitation sites of the Patwin along both banks of the Sacramento River, where small knolls were sufficient to protect the inhabitants from severe winters. Patwin were also commonly found along seasonal streams and springs in the foothill regions fronting the western margin of the Sacramento Valley.

The Patwin were organized into a principal village and a few satellite settlements. These groups were small, autonomous, and sometimes bound by the limits of a small drainage. Each group had a head chief, and each village had a chief who administered its economic and ceremonial activities. The position of chief was usually inherited through the male line, but village elders occasionally chose some chiefs. McKern (1922) presented Patwin social structure in terms of three systems: the patrilineal family, the family social group, and the household unit.

The patrilineal family and descent were important features of Patwin social life, and the authority bestowed on the headman of each patriarchal family was undisputed, except in matters of tribal authority. The family social group is a larger unit that includes the husbands of female patrilineal family members and is unified by the authority of the family headman. Matrilocal residence was customary among the Patwin, and husbands routinely remained with their wife's families at least until they acquired enough wealth to establish an independent household (Kroeber 1932, 1970; McKern 1922, 1923).

Patwin subsistence relied on hunting, fishing, and gathering a wide variety of plant resources that were within their territory. Acorns were a major part of their diet and were obtained from hill and mountain oaks communally owned by the tribelet. Other easily gathered resources included blackberries, elderberries, wild grapes, new tule shoots, roots and bulbs, honey, salt (acquired from burning salt grass), and tobacco (Kroeber 1970). Kroeber's informants, however, did not report familiarity with many plants (e.g., buckeye, hazelnut, manzanita, etc.) that are dietary staples among other Native American groups.

Ethnographic records indicate that large game (e.g., deer, tule elk, antelope) were captured using nets or were shot using bows and arrows. Kroeber reports that two men would hold a wide meshed net while other hunters would drive deer into it, and waterfowl (ducks, geese, mudhens, quail, etc.) were also captured using nets. Fish were also a prime resource, and certain fishing sites were privately owned. Fish (such as salmon, sturgeon, perch, chub, sucker, hardhead, pike, and trout) and other riverine resources (such as turtles and mussels) were caught with bone fishhooks, nets, seines, and weirs. Food resources were generally stored in bins and granaries, which were made of sticks set into the ground and were roofed with tules.

The Patwin manufactured a variety of utilitarian and ceremonial/luxury items, including baskets, stone tools, mortars and pestles, shell beads, and clothing. Coiled and twined baskets of willow and split tule were used for various purposes, including food collection, preparation, serving and storage; use as baby carriers; and for use as grave goods that were interred with the dead. A variety of tools (i.e., projectile points, bifaces, drills, scrapers, and knives) were manufactured from obsidian, chert, and basalt for both utilitarian (skinning, butchering, etc.) and ceremonial (such as burial accompaniment) purposes. Pestles and mortars made of oak and stone were used to process both plant and animal resources. Shell beads were also manufactured for personal adornment and as a medium of exchange. Clothing was generally minimal, and “men went without any covering, women wore skirts or aprons of tule or shredded bark” (Kroeber 1925).

The Patwin traded for various commodities and subsistence resources using clamshell disc beads as a medium of exchange. Kroeber referred to Patwin territory as a center for several religious sects among groups of central California Native Americans. These sects were generally based on the organization of male secret societies and are characterized by Kuksu or “bighead” dances. Kuksu emphasized curing and shamanistic functions, and its ceremonies generally consisted of impersonating spirits who journeyed from their home to a village, blessed the village, and then returned home (Kroeber 1925).

3.3.2 The Miwok People

The Ompin group of Bay Miwok are associated with the eastern and southeastern Suisan Marsh edges, where the San Joaquin and Sacramento rivers enter the Suisun Bay (Meyer et al. 2013). Within the Bay Miwok grouping were the Saklan, Chupan, Wolwun, Julpun, and Ompin (Beeler 1955; Bennyhoff 1961). Archaeological and linguistic data support the assertion that the Miwok had arrived in the Diablo and Delta area before A.D. 1, displacing the earlier Hokan-speaking people that lived in the region (Wiberg 2010).

The Bay Miwok were hunter-gatherers, taking advantage of the abundant natural resources in the Delta and alluvial plains (Levy 1978). This lush environment was able to sustain a relatively dense population despite the lack of agriculture. The Delta marshland was very productive as were the Central Valley grasslands. Less productive portions of the regions included the uplands, which were able to support a mixture of oak and conifer trees (Wiberg 2010).

Like many other California groups, acorns were a staple carbohydrate of Bay Miwok foodways. In addition to this, however, a variety of flora and fauna were available for foraging and hunting. These included “several types of berries, clover, wild onions, and carrots, mammals, fish, reptiles, shellfish, and insects” (Wiberg 2011: 14). Vegetal resources also provided the material for cordage and weaving baskets. Baskets were used for cooking, as utensils, storage containers, water jugs, and as trays for leaching and drying acorn meal (Kroeber 1925:467).

Importantly, the Bay Miwok were not passively acquiring their subsistence from the environment. They were, in fact, very active in managing and improving their environment through fire. By burning grass and brush annually, they were able to be in better control of their natural resources. Their foraging for deer and rabbits was improved by eliminating much of the area in which they would hide. Periodic burning also kept them safe from predators and neighbors and improved the land's productivity (Wiberg 2010).

The Bay Miwok were organized into "tribelets," which were, "small independent group[s] of usually related intermarried families occupying a specific territory and speaking the same language or dialect" (Wiberg 2010: 22). Notably, a great diversity of languages was present in contact-period California, with some dialects only spoken by very small groups. These groups were not isolated, however, as trade and marriage enabled tribelets to access resources they otherwise would not have accessed. Other aspects of social life that would bring people together include regional festivals and religious dances. The division of labor within California tribelets usually distinguished between women's work in food harvesting, preparation, weaving, and childrearing, and men's work in hunting, fishing, trade, warfare, and the training of older sons.

When the Spanish arrived, trade patterns that were thousands of years old were in place. Archaeological evidence suggests that these trade patterns brought goods from as far as a few hundred miles away based on the sourcing of obsidian artifacts. Mollusk shell beads and ornaments, "evolved through many different and definable types through the millennia," which allows archaeologists to both estimate a relative date for a site and the social and cultural position of the people who once lived there (Wiberg 2011: 15).

The territory of the Saklan was, "the interior valleys from Lafayette to Walnut Creek and Danville" (Cook 1957: 147). Although the central village may have been near modern Walnut Creek, "at least two smaller, subsidiary Saklan settlements were known to exist" at the time of Spanish colonization (Fredrickson 1968). The location of these settlements is currently unknown. Although Spanish observations suggest that total Saklan population in the early nineteenth century was between 100–300 people (Fredrickson 1968), this number may have been much higher. Based on the group's absorption of 40 people lost to missionization between 1794–1798, as well as the conversion of others and attrition due to disease and food supply inconsistencies, Cook (1957: 143, 147) suggests that the preconquest population must have reached, "at least 300 and very likely was much greater."

More comprehensive ethnographic and archaeological summaries of the Saklan and their neighbors in what is today Contra Costa County may be found in *The Handbook of North American Indians, Volume 8: California* (Levy 1978:398–413), *Handbook of California Indians* (Kroeber 1925: 442–461), and *California Archaeology* (Moratto 1984).

3.4 Historic Overview

The history of northern California, Solano County, and the Proposed API/APE, in particular, can be divided into several periods of influence to establish a historic context to assess the potential significance of historic sites in the Proposed API/APE. Due to its location 40 mi (65 kilometers) east/northeast of San Francisco, the Proposed API/APE was largely isolated from the Spanish and Mexican periods of California. Therefore, events associated with the Spanish and Mexican periods, and cultural remains from those periods, are not expected to be reflected in the Proposed API/APE but are discussed briefly as a point of reference.

3.4.1 Spanish Era (1769–1821)

The earliest historical accounts of the area come from the Spanish explorers who ventured into the area east of the Bay Area in the late eighteenth century. In 1775, when Captain Juan Manuel Ayala's expedition explored the San Francisco Bay, some of his men may have ventured up the Sacramento and San Joaquin rivers during three explorations of the Bay that yielded the first accurate maps of San Francisco Bay (Kamiya 2014). In 1776, the Anza-Font expedition traveled along the southern shore of Suisun Bay until reaching Antioch, where they noticed numerous campsites before turning southeast in an attempt to cross the tule swamps (Cook 1957). There is no evidence that the Spanish explored north of the river at the site of the Proposed Project during this period, but they must have passed within a few miles of it on the southern side of the river (Farris et al. 1988).

At the time of the Spanish arrival, Solano County was home to the Patwin Indians. Some of their village places have survived phonetically in such modern places as Suisun, Soscol, Ulatis, and Putah (Solano County 2023).

3.4.2 Mexican Era (1822–1848)

Under the Spanish, the missions controlled the land. After Mexico seceded from Spain in 1821, land was granted to private citizens, a practice that increased significantly after the 1833 act of the Mexican legislature that established the secularization of the missions (JAH 2005). By 1845, the last of the mission land holdings were relinquished, opening the way for the large ranchos common to California in the mid-1800s. Predominant land use on the ranchos was the raising of livestock and ranching. The Proposed API/APE straddles two Mexican-era land grants, or ranchos, within Solano County and Contra Costa County.

The northern of these was the Rancho Ulpinos. It included 17,726 acres in southern Solano County, including what would become the cities of Collinsville, Rio Vista, Newtown, Birds Landing, and Montezuma. This Rancho includes two watercourses: the Sacramento River and the Estero Ulpinos. This Rancho was given to John Bidwell in 1852 by Governor Manuel Micheltorena (Perez 1982; U.S. District Court [USDC] 1857).

The 1848 Treaty of Guadalupe Hidalgo that ceded California to the U. S. provided that the land grants would be honored. As required by the Land Act of 1851, a claim for Rancho Los Ulpinos was filed with the Public Land Commission in 1852 and the grant was patented to John Bidwell in 1866 (USDC 1857).

The other rancho in the API/APE of the Proposed Project is the Rancho Los Medanos, immediately south of the Rancho Los Ulpinos. It is composed of 8,853 acres, including the watercourses of the San Joaquin River and the Suisan Bay, and covers the modern-day cities of Pittsburg and Antioch (Perez 1982).

The ranch was granted in 1835 to Jose Antonio Mesa and Jose Miquel Garcia. Mesa and Garcia sold the southern half of their rancho to Colonel Jonathan D. Stevenson in 1849 and the northern half to James Walsh, Michael Murray and Ellen Fallon in 1850. There was confusion about the orientation of the grant, and in 1851, Stevenson arranged an exchange of deeds, whereby he received the western half of the rancho and Walsh, Murray, and Fallon received the eastern half (Supreme Court of California 1904). As required by the Land Act of 1851, a claim for Rancho Los Medanos was filed with the Public Land Commission in 1852, and the grant was patented to Jonathan D. Stevenson et al. by 1862 (Hoffman 1862).

3.4.3 Historical Era (1848–present)

Contra Costa County

Contra Costa County was one of the original 27 counties established in California, created by the legislature in 1850. The name refers to its position on the “opposite coast” directly across the bay from San Francisco (McCullough 2022).

The Spanish visited Contra Costa County in the 1770s during exploratory expeditions and named many of its geographic features and created some of the earliest maps. Later, Spain and ultimately Mexico granted great tracts of land called ranchos to settlers. Cattle ranching came first, followed by more varied farming (McCullough 2022).

One of the early responsibilities of the county was roads, which were important in the early days as connectors of the communities that spread across the county. These earliest communities, such as Antioch, Danville, Lafayette, and Walnut Creek, have grown into thriving cities and towns (McCullough 2022).

There are also several examples of towns that no longer exist. The great boom in coal mining in the eastern part of Contra Costa County created several thriving settlements, such as Stewartsville. Coal was one of the biggest industries in Contra Costa County from the 1860s until the early 1900s (McCullough 2022).

Agriculture was the latest economic activity in the nineteenth century, and through the years, there was a succession of crops grown, with wheat, grapes, and walnuts being the front runners. Industrial development eventually occurred with the Standard Oil refinery in Richmond, as well as other refineries later. Sugar refining, canning, explosives, and lumber also flourished in the late 1800s. The presence of deep water along the western shore and the Carquinez Strait made agricultural development in the region possible. Port Costa was an important spot from 1879 until 1930, serving as the point where the trains crossed the Carquinez Strait on an immense ferry, the largest in the world (McCullough 2022).

The coming of the Southern Pacific and Santa Fe Railroads in the latter part of the 1800s and the early 1900s made this industrial development even more attractive (McCullough 2022).

Today, Contra Costa County is home to more than one million residents with 19 cities and many established communities in the unincorporated area. It is now the ninth most populous county in the state (Contra Costa County 2022).

Solano County

Throughout history, Solano County has been overwhelmingly agricultural in character (EDAW 2008). Different parts of the county had different soil and climate conditions, resulting in different kinds of agriculture predominating in different areas. Agriculture also changed over time as farmers experimented with different crops and discovered which ones were most productive. The arrival of the railroad and refrigerator cars stimulated further changes.

During Mexican occupation, and for some years after that, cattle raising was the principal industry of the county (EDAW 2008). The valleys were filled with oats, and one early county history repeated an oral account regarding the height they attained: a man seated on horseback could reach out with either hand, grab a fistful of oats, and tie a knot over his head. Grazing cattle could be seen only by the paths they had made.

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In the late 1840s and 1850s, former gold seekers and pioneers began settling Solano County, where they raised livestock and cultivated fruit orchards, vineyards, wheat, barley, and oats (EDAW 2008). Produce and livestock were transported overland by wagons to the many sloughs throughout the county, and then shipped by water to waiting markets. Twelve townships were established in Solano County between 1850 and 1871. Although the largest towns were adjacent to San Pablo and Suisun Bays, most towns were situated at the ends of sloughs or channels that primarily ran through the eastern portion of the county.

One of those towns was Collinsville, originally called Montezuma Township, named after L. P. Marshall's Montezuma House nearby on the northern edge of Suisun Bay. The town was later sold to C. J. Collins in 1859 and was officially named Collinsville (Gudde 1998). By 1861, the Collinsville wharf was built, and the town applied for an official post office, allowing for better business and trade in the area (Supreme Court of California 1882). The small fishing village was approved for a steam ferry in 1868 to travel between Collinsville, New York Landing, and Antioch. It soon became a major ferry stop for hides and tallow crossing the Carquinez Strait while traveling to the cities farther south. In 1867, the town was purchased by S. C. Bradshaw, who renamed the town Newport and began selling some 29,000 lots, many of which were (literally) underwater (at high tide). The scam failed, and the sheriff seized the town and renamed it Collinsville. The land was later sold to E. I. Upham who returned the name Collinsville to the town in 1872 (Bowen 2000).

By the 1870s, Collinsville had a large salmon cannery and hotels and stores that serviced its workers. When the cannery closed, Collinsville began declining; the population fell to just eight people and some 20 homes. Although the population has increased slightly since then, a fire in 2014 destroyed half of the remaining sleepy town.

In 1868, the completion of the California Pacific Railroad through Solano County allowed the shipment of goods to East Coast markets, significantly bolstering economic development, agricultural production, and population growth (EDAW 2008)

In 1913, the Oakland, Antioch, and Eastern Railway, a high-speed electric interurban railway, opened its 93-mi route from San Francisco to Sacramento through largely unpopulated parts of southern Solano County (Boehle 2013). In 1928, the Sacramento Northern Railway purchased the railway, but the Depression and the popularity of the automobile contributed to the end of passenger service in 1940; by 1987, the railway had been abandoned (EDAW 2008).

Fruit agriculture dominated the early history of Solano County. One of the earliest fruits to prosper in Solano County was grapes. Grapes were plentiful from the 1850s to the 1870s, but in the latter decade, disease ruined much of the grape harvest. In the late 1870s, grape vines were largely replaced by orchards.

Currently, Solano County's most prevalent economic activities continue to be agriculture and livestock. A wide variety of vegetables, fruit, and nuts are grown, with walnuts being the most recent crop to gain popularity. The county is in the top five California producers of corn, lamb, sheep, and Sudan grass hay (EDAW 2008).

Increasingly, the county has become a bedroom community for Sacramento and the San Francisco Bay area, and major companies such as Anheuser-Busch, BIOSOURCE Technologies, Chiron, Costco, Genentech, and Pacific Bell are in Solano County (EDAW 2008). Even though a modern technological industry had moved into the northern county, Collinsville remains a small and isolated rural community.

Sacramento County

The first permanent settlement within the limits of what is now Sacramento County was established by Captain John A. Sutter, a European explorer known for his pioneering expeditions across the Americas. Sutter arrived in what would become the Sacramento region via the Sacramento and Feather Rivers and established "Sutter's Fort" in 1839. Sutter's Fort quickly became a hub for fur trade and immigration into the remote region of Northern California. Year by year, parties of immigrants gradually increased, until after the discovery of gold, when they could be counted by thousands and tens of thousands (Davis 1890).

With the discovery of gold in California in 1848, the Sacramento region became a national and international focus of attention, drawing a mass migration of gold seekers, miners, and pioneers to the area (Davis 1890). During the Gold Rush era, Sacramento served as a center for commerce and agriculture as well as a major supply distribution point. The area was a terminus for wagon trains, riverboats, and stagecoaches. With the influx of migration to the area, Sacramento County was incorporated in 1850 in response to the needs of a growing population. The County is one of the original 27 counties of California and became the capital of the State of California in 1854.

Construction of the Central Pacific Railroad began in Sacramento and continued east to join the Union Pacific line in Utah in May 1869, forming the first transcontinental railroad and opening a major transportation route that linked the United States from the east and west (Davis 1890). Communications also opened up with the arrival of the Pony Express and the introduction of the telegraph. By the early 1900s, the use of automobiles was growing rapidly, and along with it came the construction of roads and bridges. Another major link between the east and west coasts, the Lincoln Highway, ran through Sacramento County.

In the early 1900s, Sacramento County was one of the large wheat growing counties, but as wheat growing became less profitable and the land became more valuable, the land gradually became utilized for vineyard and orchard production. The region's soils and climate were admirably adapted for these crops with its thermal belt in the foothills and higher plains regions. Sacramento became the chief shipping point for all kinds of fruits, especially citrus fruits (Davis 1890).

By the end of World War I, the area housed an airfield and a pilot training school and became a hub for the construction of bi-wing airplanes in the northern region of the county (Davis 1890). After the war, many of the planes were converted for civilian use. From that time on, aviation has grown to become a vital part of the region's development. Today, the County is home to the Sacramento County Airport System, which includes the Sacramento International Airport. Several military installations were in the region during the 1900s. Although the bases have closed, two former military locations, Mather and McClellan, have now become active business centers within the County.

Today, Sacramento is now home to seven cities and hosts a diverse employment sector. Government remains a major employer, with federal, state, and local offices in the region. The State Capitol houses the executive and legislative branches of the California government. Other large employment sectors include education, information technology, health services, leisure and hospitality, and transportation (Sacramento Country 2023).

4 Historical Background

4.1 Historic Context

4.1.1 Maritime History of the Sacramento River Delta

As a result of its role as a riverine navigational corridor between San Francisco Bay and the interior of California, the Sacramento River Delta experienced intensive navigation throughout the nineteenth and twentieth centuries. Though earlier European exploration of the Sacramento River Delta widely employed boats, regular navigation of the Delta was only introduced in the 1830s.

In 1810, Mexico rebelled against the Spanish crown, ultimately gaining its independence from Spain in 1821. The Republic of Mexico issued land grants in the Sacramento area beginning in 1833, when John Rogers Cooper, a British sea captain who had married into a native California family, received one of the first grants in the area. The largest grant was issued to John Sutter, who in 1839 founded the town of New Helvetia near current-day Sacramento. The establishment of this town, the center point of several land grants, began the era of regular traffic on the river.

In 1841, Sutter purchased Fort Ross (renamed Sutter's Fort) for \$30,000, which also included a steam launch that he named the *Sacramento*. This vessel was the first to make regular round trips from the Sacramento area to San Francisco, taking two weeks for each trip. Soon after his purchase of the fort, Sutter constructed a road from the fort and a wharf at the mouth of Sutter's Slough, which became known as the Embarcadero (Figure 4-1).



Figure 4-1. Artist's conception of the Embarcadero prior to the gold rush (courtesy of the Sacramento Pioneer's Association Collection, City of Sacramento, Museum & History Division).

The area surrounding the Embarcadero, like most of the delta, was subject to frequent flooding, and, in Sutter's mind, was not a suitable location for a settlement. The Embarcadero was simply

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intended to be the port for his planned town of Suttersville, which he located to the south on higher ground. One of the earliest narratives on the Embarcadero is provided by William Grimshaw, who visited the area in November of 1848:

In about ten days—an average passing (traveling in a ship’s longboat)—we arrived at Sutter’s Embarcadero and made fast to some Sycamore trees, at the outlet of Sutter Slough and just above what is now the foot of I Street. Here was a spit of sand something like a small strip of beach.

The only vessel here was the barque *Providence*, dismantled and fitted up as a store by George McDougal and William (afterwards Judge) Blackburn. This vessel was moored to the river side and on the bank above was a broad shanty in which lived the firm above named Wm. Nuttal, their clerk, and my old shipmate, Tom Newton, porter. Mrs. D. was living under the protection of McDougal as his mistress.

This shanty was at that time the only building where now stands the City of Sacramento. There was a rancheria of miserable Indians, who appeared to live by fishing, and a lot more were encamped across the outlet of the Slough. All the rest of the place was a complete wilderness. (Kantor 1964:11-12)

The Embarcadero was the main docking point for the area and would later become the jumping-off point for the thousands of people entering the area during the gold rush.

With the constant arrival of ships, passengers, crew, and cargo to the Embarcadero, the distance between it and the city of Suttersville became somewhat impractical. Sutter’s son, John Sutter, Jr., helped, with the aid of Sam Brannan, to undercut John Sutter’s plans to make Suttersville the area’s main settlement by creating the town of Sacramento near the Embarcadero. The two cities briefly vied for control of the Sacramento River and the gold rush trade, ultimately resulting in Suttersville ceasing to exist as a viable center, leaving Sacramento as the dominant town in the area (Figure 4-2).

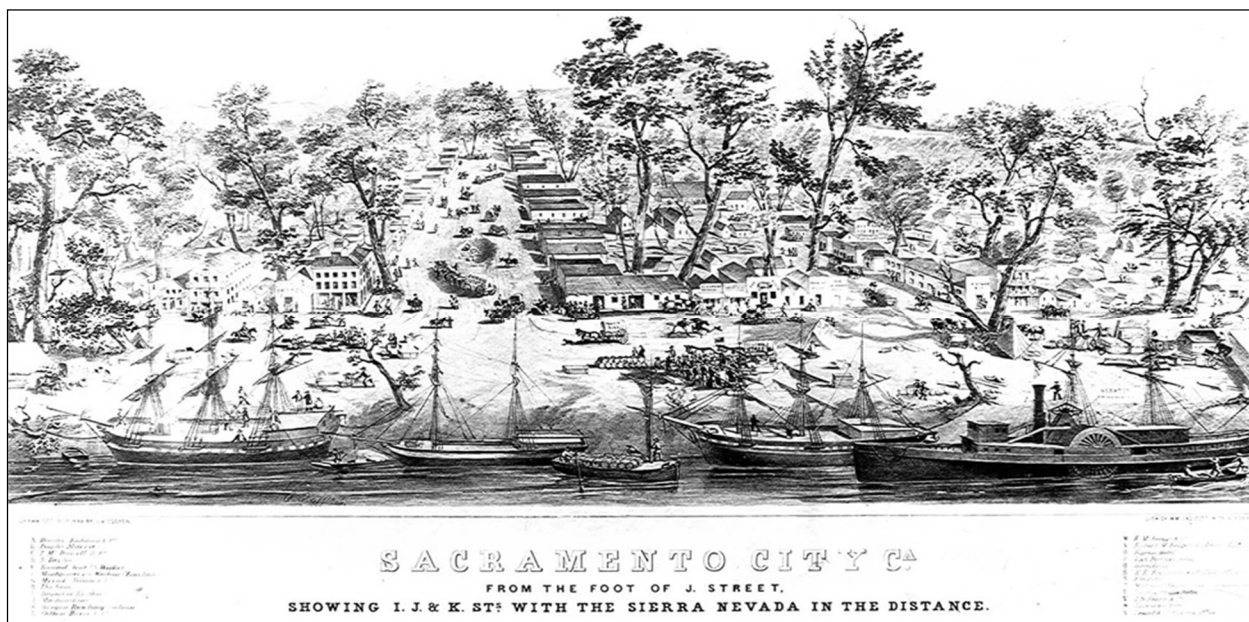


Figure 4-2. Lithograph of Sacramento in 1849 (courtesy of California State Library).

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In 1847, the first steamboat to make regular runs on the Sacramento River was put into service. The *Sitka*, a small sidewheeler, barely 37 feet long, was purchased unassembled from the Russia America Company and assembled on Yerba Buena Island. Taking six days to make the run from Sutter's Fort to San Francisco, the vessel was generally slower than walking due to its weak engine. It was removed from service after a short time and converted to a sailing vessel, then sank in San Francisco Bay in 1848.

With the discovery of gold at Sutter's Mill in 1849, 100,000 gold-seekers descended on California, many of whom passed through Sacramento and the Embarcadero. With this mass influx of people came great demand for goods and services, and a market eagerly filled by merchants and shippers from all over California. Among the first cargo vessels to arrive at Sacramento in 1849 were two ocean-going sailing vessels, the *Joven Guipuscoana*, owned by Sam Brennan, and the *Eliodora*. The *Whiton*, a bark, was among the first vessels to arrive from the east coast of the U.S. with a stated destination of Sacramento, reaching the Embarcadero on May 2, 1849.

As occurred in most ports during the height of the gold rush, as quickly as vessels arrived at the Embarcadero, their crews jumped ship to seek their fortunes in the gold fields. Abandoned vessels were turned into warehouses, hotels, store ships, and other uses (Figure 4-3). One abandoned vessel, *La Grange*, was used as the Sacramento jail from 1850 until it sank in 1859.

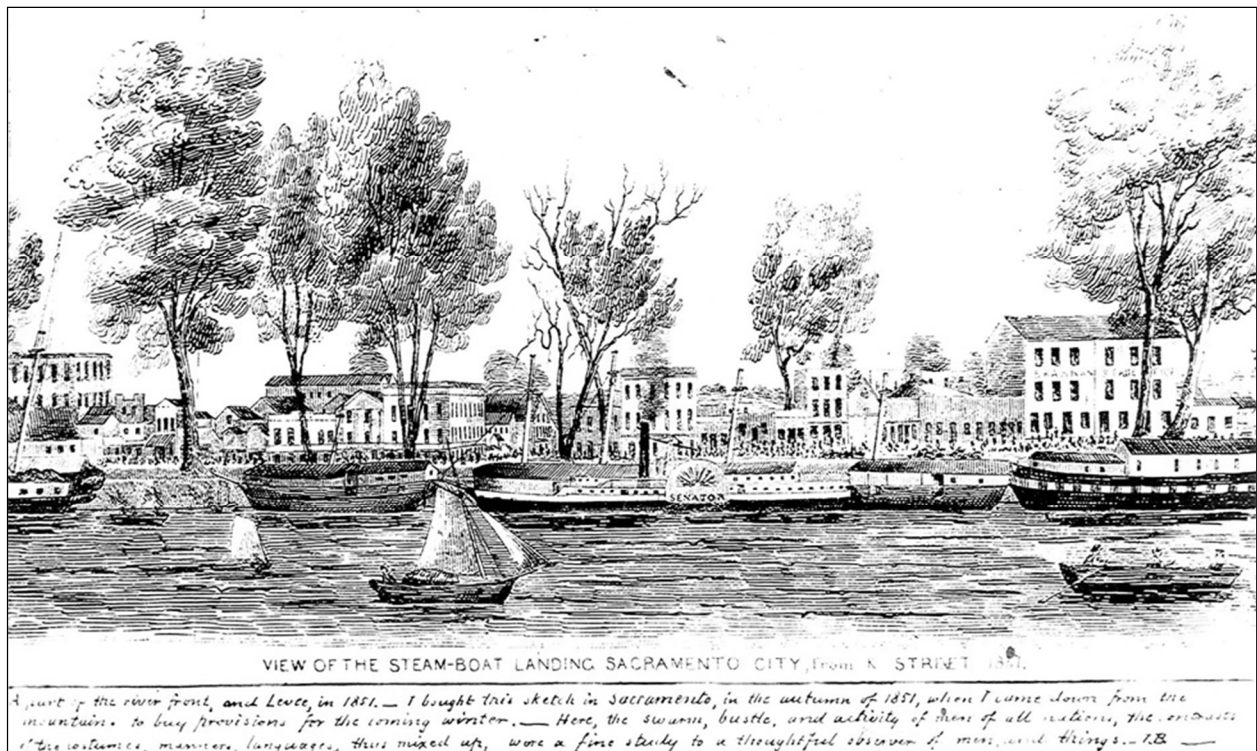


Figure 4-3. Sacramento waterfront in 1851, showing converted store ships (courtesy of the California Department of Parks & Recreation Collection, City of Sacramento, Museum & History Division).

Despite the rush of people to the gold fields and the abandonment of vessels by their crews and sometimes owners, some entrepreneurs recognized the money to be made in providing services to the gold rush participants. This included regular transportation service on the Sacramento River.

Ocean-going sailing vessels were impractical, as they typically took a week or more to travel from San Francisco to Sacramento, and often had to be towed or kedged up the river. The answer, of course, was steam. In November of 1849, the steamer *Senator* arrived at Sacramento and began regular service between that town and the coast. Carrying up to 300 passengers and 300 tons of freight per trip, the vessel made three round trips per week. Charging \$30 per passenger for a one-way trip from San Francisco to Sacramento, and \$30 per ton for freight, the *Senator* cleared monthly profits of \$60,000.

Such profits enticed other vessels, and by 1853, there were six vessels providing service between the two cities. Although such competition drove down the high rates, profits were still high as the demand for transportation increased. In the summer of 1850, 203 vessels reached Sacramento, rising to 426 in 1851. Traffic reached a peak in 1852 and began to drop in 1853 due to the departure of many miners, who left after the easily accessible gold deposits had been extracted. Traffic would again increase in the area at the end of the decade with the discovery of the Comstock Lode in 1859.

In 1854, the California Steam Navigation Company was incorporated. This organization was essentially a cartel made up of the largest vessel operators on the river. Seven vessels, including *Confidence*, *Colusa*, *Governor Dana*, *New World*, *Antelope*, *Helen Hensely*, and *Sam Soule*, were able to leverage their domination of trade on the river by cutting prices, gaining control of wharves to shut out other operators, and other monopolistic behaviors. Operators that were not a part of the cartel either went bankrupt or agreed to charge prices fixed by the cartel.

With the expansion of agriculture along the Sacramento River after 1855, the river became the main route of travel for produce, linking the development of agriculture and the development of river navigation. Many farmers used small sloops, schooners, and other small vessels to bring their crops to market. These produce vessels soon evolved into a specialized type that was adapted to the needs of the river and the farmers. By 1864, regular service to San Francisco by these freight vessels was in place. Each vessel made two round-trip runs from San Francisco each week, dropping off empty shipping containers on the upstream trip and loading produce on the downstream trip.

Small steamboat companies evolved to serve the needs of the farmers. In 1867, the first produce steamer entered service on the river. The *Reform*, a 181-ton sternwheeler, offered a two-day round-trip service to San Francisco, carrying both cargo and passengers. Like the many sloops that preceded it, *Reform* called at many of the smaller landings on the river. The operation of this vessel evolved into the California Transportation Company, which was formed in 1875 and operated a small fleet of steamers until the end of the steam era (Thompson 1957:404).

In addition to organized vessel lines, several independent operators with one or perhaps two vessels, such as the *Dutchess* (Figure 4-4), provided service between smaller cities and the larger centers like Stockton and Sacramento. In the 1890s, J.C. Parker ran a small steam launch, *Belvedere*, between Rio Vista and Sacramento, making the round trip daily with stops at many small towns in between (Figure 4-5). In 1895, he incorporated the Parker Transportation Company, launching a larger vessel for the same run (Sacramento River News 1895) that could make one leg of the trip in four hours.

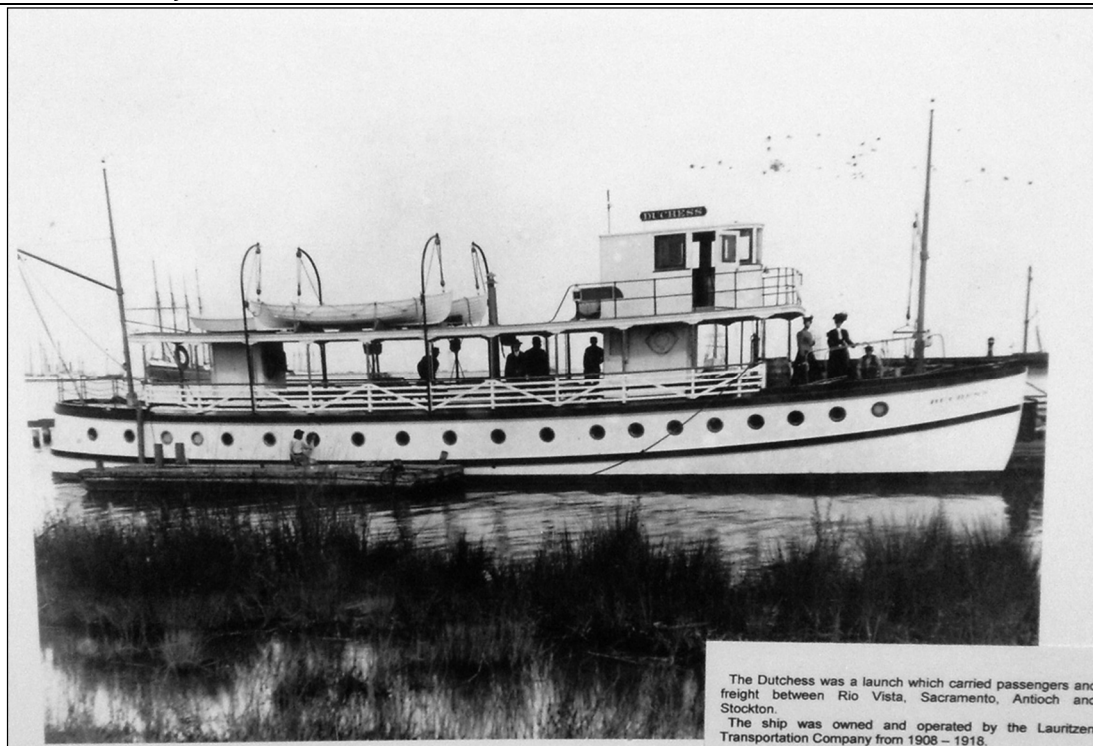


Figure 4-4. Steamer *Dutchess*, operated by Laurentzen Transportation Company between 1908 and 1918 (photo courtesy of Rio Vista Museum).

STEAMER BELVEDERE
LEAVES RIO VISTA DAILY AT
5 a. m.; Isleton, 5:35; Ryde, 6:30;
Walnut Grove, 6:45; Courtland, 8;
Clarksburg, 9; Freeport, 9:45. Arrive
at Sacramento at 11:30 a. m.
Leaves Fish Market, between K and
L, Sacramento, at 3 p. m.; Freeport,
4:15; Clarksburg, 4:45; Courtland, 5:30;
Walnut Grove, 6:30; Ryde, 6:45; Isle-
ton, 7:30. Arrive at Rio Vista at 8 p.
m. Stops made at all landings. Fare,
\$1, and 50 cents between landings.

Figure 4-5. 1894 *Sacramento River News* advertisement for passenger and freight service by steamer *Belvedere* (*Sacramento River News* 1894).

The small river vessels, both steamers and sailing vessels, independent and corporate, served a distinct need, as the larger river steamers stopped only at major towns along the river. Steamers such as the California Transportation Company's S.M. Whipple and the Chin-Du-Wan most likely stopped at all landings between Sacramento and San Francisco at one time or another. Historic maps depict many of these landings, which were constructed by, and belonged to, farmers and small towns along the river. There were likely many more landings that are not illustrated on maps.

Shipping on the Sacramento River increased throughout the second half of the nineteenth century and well into the twentieth century. At the beginning of the 1880s, an average of 202,000 tons per year were shipped on the river, increasing to 400,000 tons per year by the end of the century. Much of this traffic was wheat, accounting for 100,000 tons in 1900.

In the 1890s, river traffic began to consolidate under navigation companies, including the California Navigation and Improvement Company, Southern Pacific Railway, and the California Transportation Company. These companies, operating smaller steamers and serving the many small landings on the river, tended to drive the independent operators, who were not able to offer the regularity of schedule or match the prices of the larger operators, out of business. Of the 400,000 tons shipped in 1900, around 350,000 tons were shipped by three major carriers, including Southern Pacific (162,000 tons), the California Transportation Company (98,000 tons), and the Sacramento Transportation Company (88,000 tons) (McGowan 1961:214).

Freight rates varied according to the amount of competition on the river and the demand from shippers. Although the ultra-high rates of the gold rush era were an anomaly, rates, in general, were fairly consistent and reasonable. In 1877, sacked grain cost \$1 per ton to ship to San Francisco, potatoes \$1.50 per ton, and watermelons \$2 per hundred. A typical landing, or calling charge, was assessed for each stop except for landings in larger cities, which were often designated as free stops (Thompson 1957:407).

In the early twentieth century, a recession in freight traffic occurred, coinciding with a drop in wheat production along the Sacramento River. The total tonnage of freight shipped on the river declined from 400,000 tons in 1900 to 350,000 tons by the end of the recession in 1908 (McGowan 1961:214).

This recession was offset somewhat by an increase in passenger traffic. The total number of passengers on the river in 1901 was 8,673. By 1908, this had increased to over 150,000 per year (McGowan 1961:215). Increased affluence, lower fares, and the increasing popularity of excursions were likely behind this meteoric increase. The most visible river steamers during this period were the Southern Pacific sternwheelers *Apache* (Figure 4-6) and *Modoc*. With a capacity of 500 passengers, these boats were typical of river steamers, carrying cargo on the lowest deck and passengers on the upper two decks. Running from San Francisco to Sacramento with scheduled stops at Rio Vista, Isleton, and Clarksburg, these boats often made stops at smaller landings to pick up produce or passengers.

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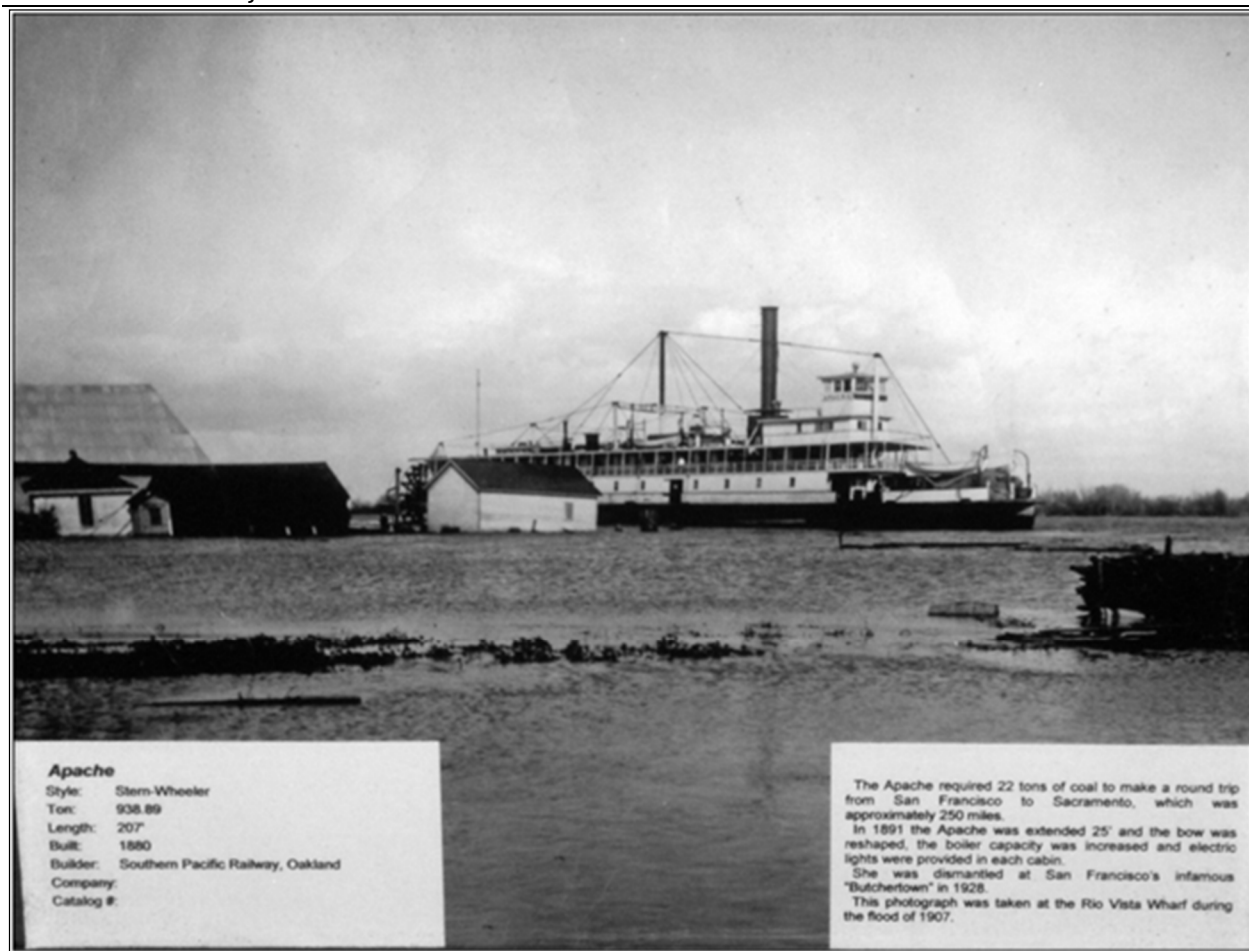


Figure 4-6. Southern Pacific steamer Apache (photo courtesy of Rio Vista Museum).

Typical of these trips was a voyage by the *Apache* on January 26 and 27, 1910. The vessel left San Francisco at 1:30 p.m. on January 26 with 26 passengers and stopped 25 times, including landings at Port Costa, Benicia, Collinsville, Emmaton, Rio Vista, Isleton, Ryde, Walnut Grove, Vorden, Courtland, and Clarksburg. Most stops were around two minutes, with the scheduled stops not often exceeding 25 minutes. The *Apache* arrived in Sacramento at 4:14 a.m., with a total upriver running time of 14:17 (McGowan 1961:215).

In the early 1910s, Southern Pacific added two more steamers to the San Francisco to Sacramento run, including the *Navaho* in 1910 and the *Seminole* in 1912. These two vessels operated as packets, making few or no stops, and ran in concert with the *Apache* and *Modoc*. The *Navaho* was described as a floating palace and was every bit as opulent as contemporary Mississippi River boats when she was launched in 1910. Making three trips per week with 10 stops on each run, she took eight or nine hours each way. The *Seminole* made no stops and typically took less than eight hours to make each leg of the trip. The *Navajo*, a fixture on the river for many years, was used along with two other vessels to block a levee breach on Mandeville Island in 1938; it was used as a bunkhouse and as storage for several years after (Figure 4-7). The *Navajo* was burned in 1973.

The California Transportation Company entered the passenger business for the first time in 1907 with the steamers *Pride of the River* and *Captain Weber*. This is mentioned in the *Rio Vista River News* of Friday, October 25, 1907, noting the new steamers and their run from Sacramento to San

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Francisco as first-class night boats carrying both freight and passengers. Meeting with success, the company launched two luxurious vessels in 1913, the *Capital City* (Figure 4-8) and the *Fort Sutter*, each being 219 feet long with four decks and capable of carrying 500 passengers.

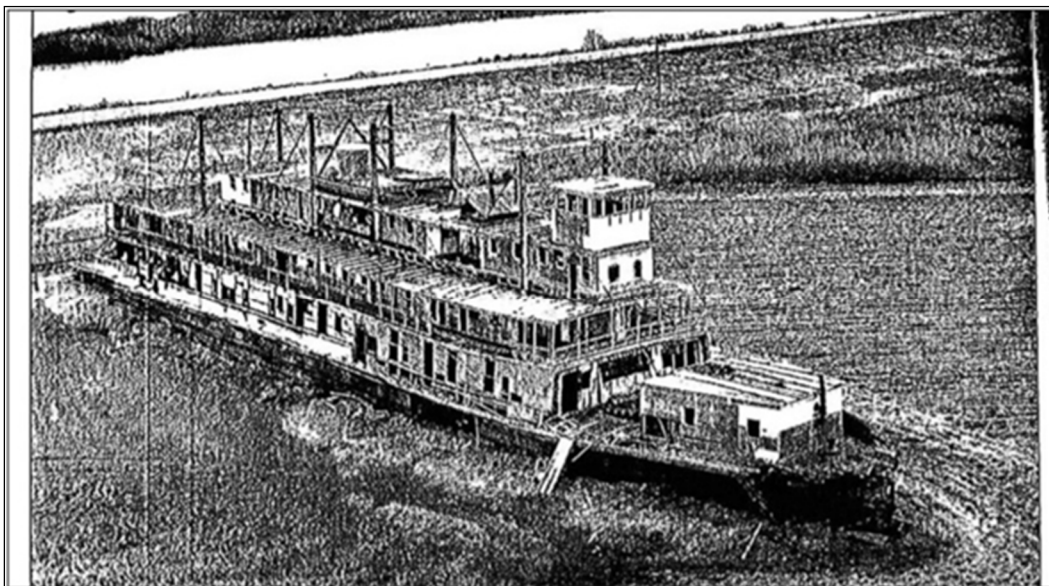
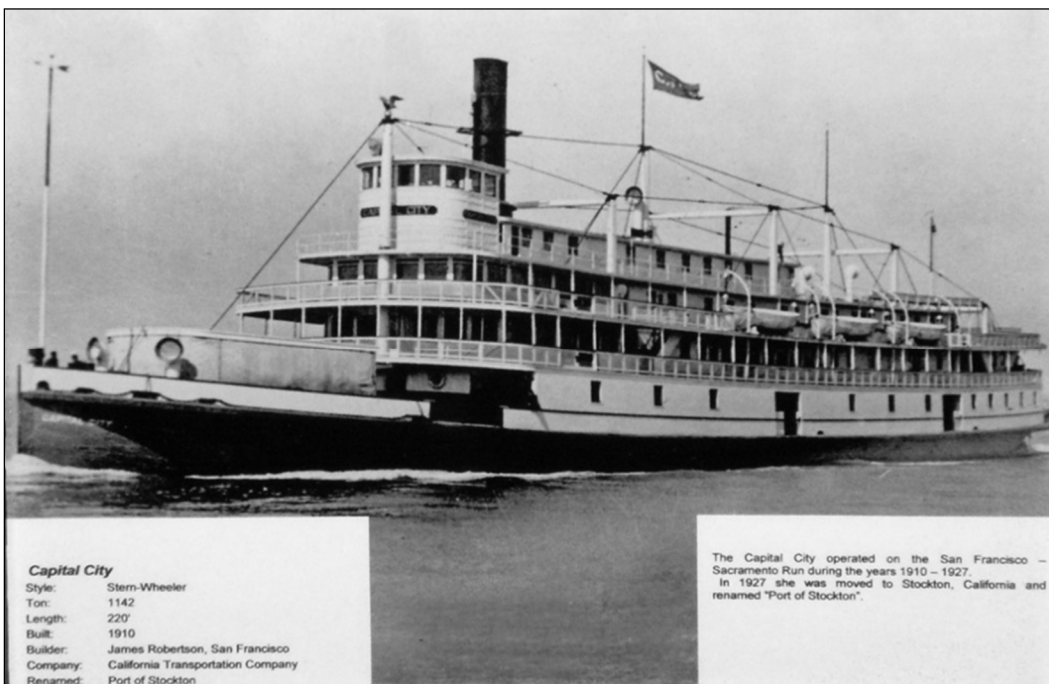


Figure 4-7. Southern Pacific steamer *Navajo*, landlocked on Mandeville Island circa 1970 (as presented in Schell 1995).



| | |
|---------------------|-----------------------------------|
| Capital City | |
| Style: | Stern-Wheeler |
| Ton: | 1142 |
| Length: | 220' |
| Built: | 1910 |
| Builder: | James Robertson, San Francisco |
| Company: | California Transportation Company |
| Renamed: | Port of Stockton |

The *Capital City* operated on the San Francisco – Sacramento Run during the years 1910 – 1927. In 1927 she was moved to Stockton, California and renamed "Port of Stockton".

Figure 4-8. California Transportation Company steamer *Capital City* (courtesy of Rio Vista Museum).

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The recession in freight on the Sacramento River began to reverse in 1910, when 500,000 tons of cargo were shipped. By 1914, this total had increased to 700,000 and then increased to 1,000,000 in 1918. At one point in 1913, eight large steamers were tied up to the Sacramento city wharf. By 1920, Sacramento had 4,734 feet of linear dockage and 201,000 square feet of warehouse space (McGowan 1961:216). In response to the increased demand for freight capacity, the Sacramento Transportation Company launched the *Colusa* in 1911. The largest freighter on the river at the time of her launch, she was over 200 feet long but drew only 4 feet when fully loaded.

Passenger traffic peaked in 1913, with 212,000 passengers. Steamer lines struggled to keep up, with passengers often having to sleep on the deck or in passageways. Passenger traffic began to decline after 1920, however, due mainly to the introduction of the automobile and the improvement of the delta's road system. The three most popular boats—*Fort Sutter*, *Capital City*, and *Captain Wheeler*—carried 102,000 passengers in 1921, but by 1929 this dropped to 61,000. Still, this equated to just over 1,000 passengers per week (McGowan 1961:217).

Despite this drop in passengers on steam vessels, the 1920s witnessed the introduction of what many consider to be the finest boats to steam the Sacramento River. In 1927, the California Transportation Company launched the twin sternwheelers the *Delta King* and the *Delta Queen* (Figure 4-9). Built of iron and powered by compound steam engines, the vessels were constructed in Scotland, shipped in pieces, and then assembled in Stockton. The *Delta Queen* and the *Delta King* were each 250 feet in length, 58 feet in beam, and drew 11.5 feet of water, with a registered tonnage of 1,300. Like most steamboats, cargo was carried on the main deck, with the two upper decks reserved for passengers. The passenger cabins were finished with oak, teak, mahogany, and Oregon cedar. Each of the vessels cost the company \$875,000.

Passenger traffic continued to decline throughout the 1920s, dropping precipitously after 1929. In 1933, annual passenger traffic had dropped down to just 23,000 from the 61,000 passengers in 1929. By 1935, it had dropped to 17,000. By 1932, the existing steamboat companies consolidated as River Lines Incorporated (McGowan 1961:218). In the consolidation process, several of the long-standing river boats were removed from service, including *Isleton*, *Pride of the River*, *Flora*, *Dover*, *Red Bluff* (Figure 4-10), *Colusa*, *San Jose*, *Valletta*, *San Joaquin No. 1*, *San Joaquin No. 2*, *Sacramento*, and *Jacinto*.



Figure 4-9. California Transportation Company sternwheelers *Delta King* and *Delta Queen* in 1936 (as presented in Schell 1995).



Figure 4-10. Steamer *Red Bluff* and barge *Nebraska* loading grain (photo courtesy of Yolo County Public Library, Clarksburg Branch).

In addition to reduced passenger load, several labor strikes further crippled the river steamboat industry. Between May 1934 and February 1937, three strikes shut down river traffic. The first of these lasted for just two months, but the second strike lasted from July 1935 to April 1936. River Lines suspended river travel, which stayed suspended—permanently, as it turned out—on the San Joaquin River. The third strike lasted three months, until February of 1937, and cost the River Lines \$100,000 in addition to the loss of income from freight shipments (McGowan 1961:218).

As the Great Depression ended in the late 1930s, so did steamboat traffic on the Sacramento. In 1941, the *Delta King* and *Delta Queen* were leased to the U.S. Navy for use as troop transports on San Francisco Bay, effectively ending passenger steam navigation in any significant amount on the Sacramento River.

Steam navigation met its demise at the same time all over the United States. Mostly, the downfall was due to a general shift from boats to automobiles for passenger travel, and a shift to railroad transportation for freight travel. However, the delta was somewhat different.

The first serious competition to river travel by the railroad industry occurred during the 1870s, as railroad lines were being laid in the delta, and silting of the upper river due to hydraulic mining during the gold rush era restricted river travel in those areas. Rail service tended to be more reliable, and according to Thompson (1957:10), drew about 75 percent of the wheat crop from these areas. However, this was not indicative of the region as a whole. The introduction of the railroad provided an easy way for growers in the delta to gain access to a national market for their various crops. This, combined with the easy navigation of the lower Sacramento and San Joaquin rivers,

which provided a direct route from Sacramento and Stockton to San Francisco, created more of a symbiotic relationship between river travel and rail travel, rather than a competitive relationship. Rail companies took advantage of the river, building feeder lines to central loading centers in Sacramento, Stockton, Antioch, and Holt, where freighters could offload their cargo for direct shipment to anywhere throughout the country (Thompson 1957:411). Immediately downstream of the present investigation's Proposed API/APE, the Sacramento Northern Railway established a rail ferry between Mallard and Chipps Island to extend its rail connections. The ferry was served by the wooden railcar ferry *Bridgit*, which served only from 1912 until 1913, when it burned. It was subsequently replaced by the steel ferry *Ramon* (Graves 1994).

Freight shipment on the Sacramento followed a different path than passenger traffic. The decade of the 1920s, which saw a gradual reduction in passenger traffic, saw an increase in freight traffic. Freight traffic dropped off after World War I, but by 1925, Sacramento had become the second most important river port in the United States, behind only New Orleans. Between 1921 and the beginning of the Great Depression, yearly freight averaged 1,000,000 tons. Wharves sprung up all along the river in response to the increased demand. There were 22 warehouses between Chico and Colusa, 25 between Colusa and Sacramento, and 35 between Sacramento and Benecia, in addition to numerous small landings constructed by individual farmers.

By the middle of the 1920s, there were over 40 individuals and companies operating commercial vessels on the river. Many of these commercial vessels were steam sternwheelers or screw tugs, which towed barges in addition to carrying freight. Barges tended to be over 200 feet long and 40 feet wide. Steamers on the upper river above Sacramento were smaller in size than those on the lower, with the largest upper river steamers in the range of 150 feet long with a 3-foot draft, compared to the *Delta King* and *Delta Queen*, both at 250 feet overall.

Freight traffic on the Sacramento River dropped considerably after the start of the Great Depression. By 1931, total yearly tonnage had dropped below 1,000,000 for the first time since the early 1920s. Total yearly tonnage continued to decline year after year until 1938, when the total tonnage only reached 600,000. Several changes occurred within the industry during this period. Emphasis began to shift from dedicated passenger/cargo steamers to steam tugs towing unpowered barges. In 1920, steamers moved four times as much freight as tugs, but by 1937, this had been reduced to just double. Although still carrying a significant portion of the overall total, steamboats were in a state of decline. By 1943, tugs were carrying twice the freight of steamboats, and by 1947, tugs were shipping over 1,000,000 tons per year. By the 1950s, the total exceeded 2,000,000 tons per year. Eventually, gasoline or diesel-driven tugs replaced steam-power.

Although the gas and steam-powered vessels dominated river traffic on the Sacramento, as they did in other parts of the world, the characteristic Sacramento River freight schooner (also known as a "Hay Scow") continued to operate well into the 1920s (Figure 4-11) (Thompson 1957:409). Initially sharp bowed, like seagoing schooners, these economical bulk carriers gradually evolved into curious scow-built vessels of shallow draft, designed to simultaneously carry large loads of cargo and to navigate the difficult shoal waters and narrow canals of the delta (Figure 4-12). Sacramento River freight schooners were well suited for the carrying of bulk cargo such as hay and bagged grains.

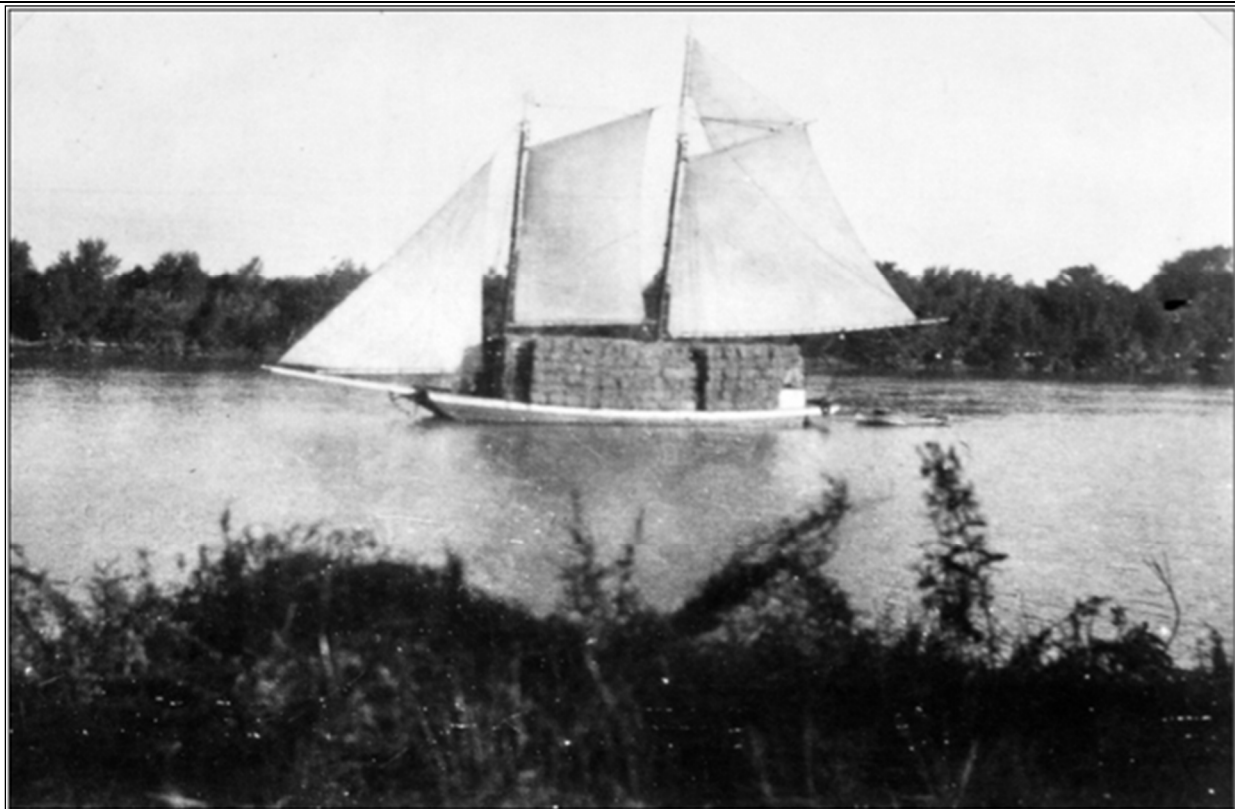


Figure 4-11. Typical scow-built Sacramento River freight schooner, also known as a "Hay Scow" (photo courtesy of Yolo County Public Library, Clarksburg Branch).

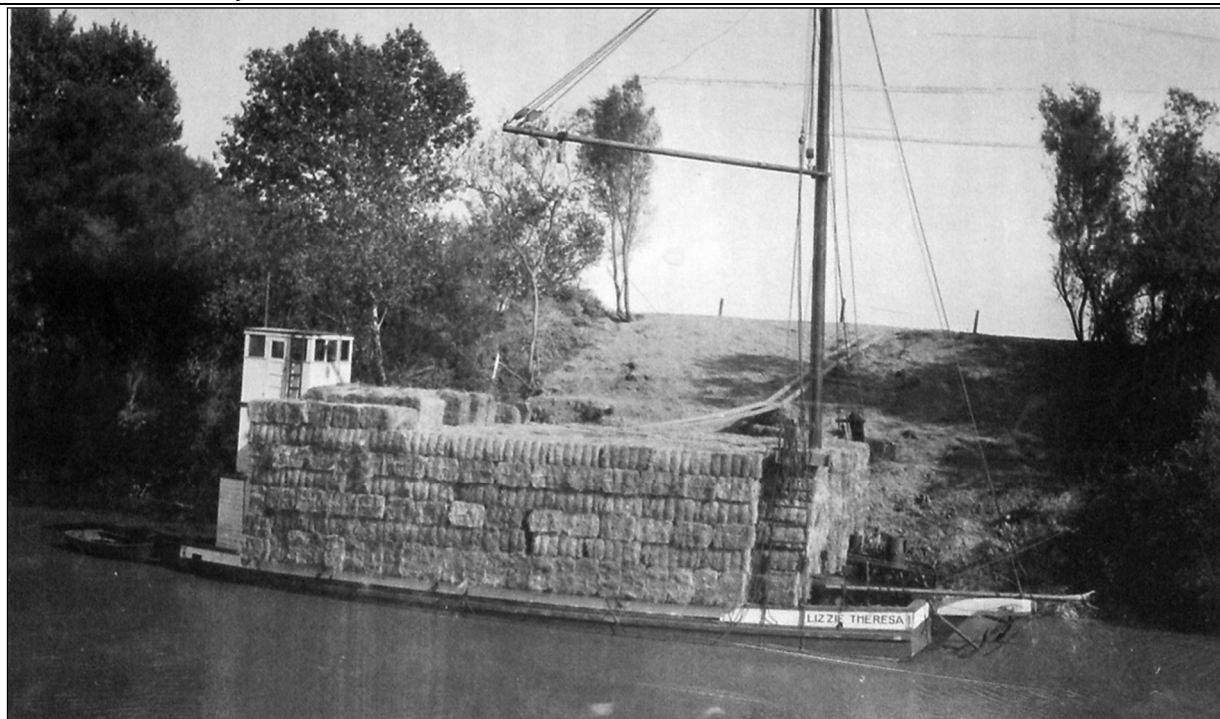


Figure 4-12. Lizzie Theresa hay scow schooner loading bales on a canal (photo courtesy of Yolo County Public Library, Clarksburg Branch).

Assisting in the decline in steamboat and steam tug shipping lines were boats owned by large-scale farming operations, which discovered a cost saving by operating their own vessels, often in competition with the steam lines.

Although the *Delta King* and *Delta Queen* have survived to the present day, most vessels of the steamboat era have not. A large number were burned to the waterline in Sacramento in 1932 when one caught fire. The *Fort Sutter* was converted into a nightclub and then moved to an aquatic park in San Francisco. The *Port of Stockton* (ex-*Capital City*) sank in San Francisco in 1952. Several were used to repair levee breaks long the river, including the 252-foot sternwheeler *Navajo* (see above), which was stripped of its engines and used to block a breach on Mandeville Island, and *J.D. Peters*, which was positioned in such a way as to be able to use its paddlewheel to push water out of the breach. These vessels were used as bunkhouses and storage sheds until they had deteriorated to the point of becoming unusable. Others, like the *Mandeville* (Figure 4-13), were simply abandoned along the riverbank, and others were cut down and used as barges.



Figure 4-13. Steamer *Mandeville* lies abandoned on the shore of McDonald Island (as presented in Schell 1995).

Not all marine transportation on the Sacramento River Delta served to link San Francisco Bay with the upper reaches of the Sacramento River. Ferries developed to transport people and various goods over short distances across water obstacles that proliferated throughout the Delta as settlement increased.

Undoubtedly, one would think the first ferry appeared shortly after the desire of one or more people to cross a river in the delta. However, early ferry history emerges during the 1850s, after the area's population had grown, cities had been founded, and improvements were made to the landscape. Beginning in the 1850s, ferries were operated locally, by individuals, landowners, or partnerships, and they were used both as commercial enterprises and for private use. Early ferries were located along major waterways, but as the population spread and delta areas were reclaimed, creating drainage channels and new waterways, ferries sprung up to provide links between the more remote areas and the mainland. They became an integral part of the area's transportation system.

Early ferry history is somewhat sparse. Some information does exist on early ferries, as Bier published a map in 1901 showing the locations of principal ferries in the lower Sacramento River area dating back to the 1850s. This map was updated by Thompson (1980) 80 years later to include ferries from the 1920s (Figure 4-14).

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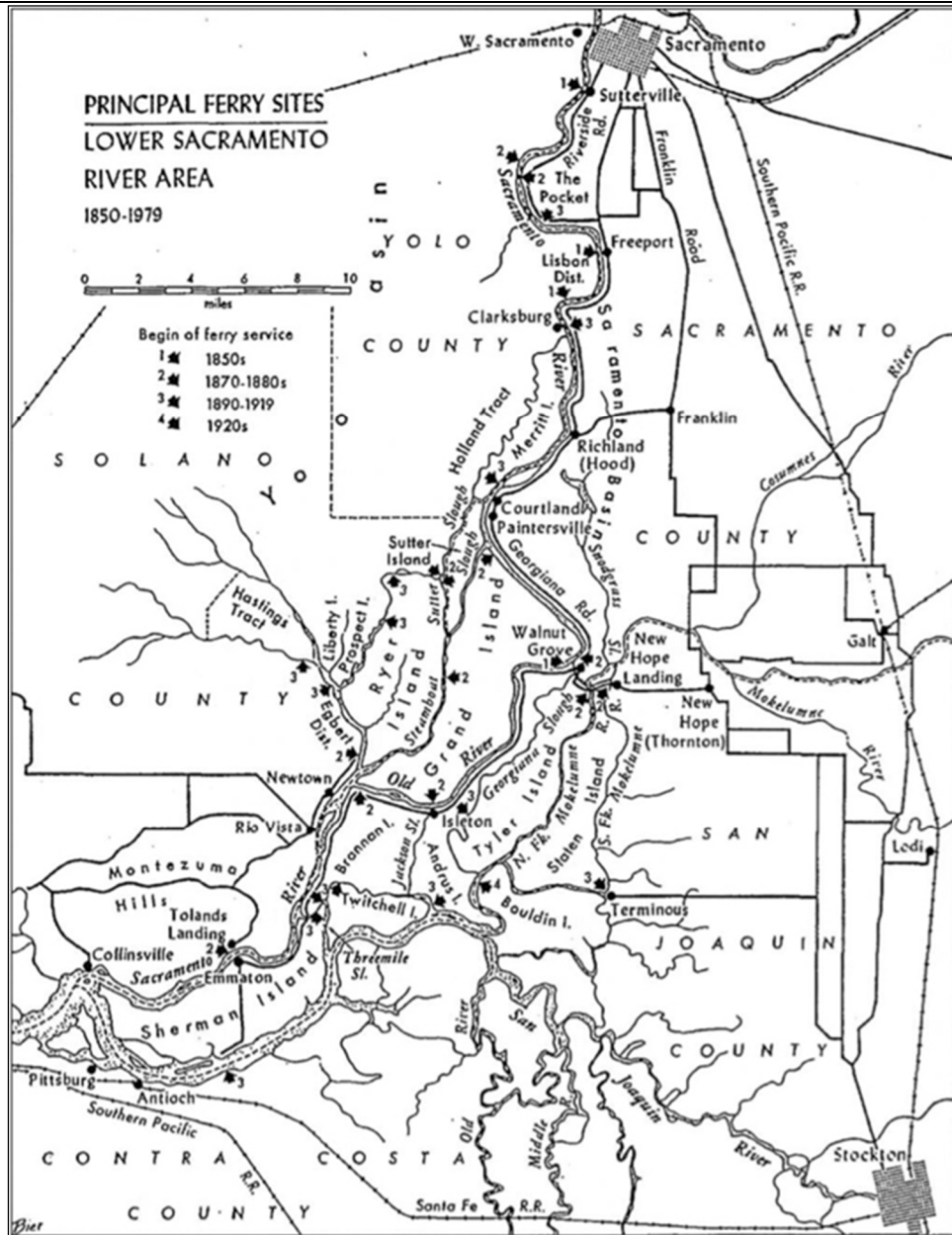


Figure 4-14. Bier's 1901 map, as modified by Thompson (1980), showing locations of ferry landings since 1850 (as presented in Thomson 1980).

As infrastructure developed and reclamation commenced and progressed, ferries became established at towns immediately adjacent to the levees. Ferries were run as commercial enterprises; initially private through the nineteenth century, later under local and county government control, and eventually as government-run free ferries. They formed an important link in the region's system of transportation, as the ferry system made it possible to travel across the Sacramento River Delta relatively unimpeded. According to Thompson (1980:62), the Old River/Newtown ferry between Brannan and Grand Islands, the ferry at Walnut Grove, and the ferry at New Hope Landing, made this travel possible at a time before many bridges had been

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constructed. Other ferries operated from smaller towns and villages to newly reclaimed areas. Wherever there was a significant need to cross a body of water in the area, a ferry existed.

Ferries varied in their mode of propulsion, but they can generally be assigned to one of three different categories: engine powered, cable, and current. Current ferries are attached to a cable running parallel to the current down the center of the channel. The ferry, attached to the downriver end of the cable, uses the attachment of the cable as leverage to rotate the vessel into the current at such an angle that it is propelled to the other bank. Cable ferries use a cable stretched bank to bank, either overhead or along the bottom, with machinery on board the ferry to pull the ferry along the cable. Engine-powered ferries can be either common river vessels simply used as ferries (Figure 4-15), or dedicated purpose-designed vessels. Propulsion can be through diesel or steam.

Ferries were gradually replaced by bridges as the network of roads expanded along with the popularity of the automobile. By the 1930s, most heavily used ferries had been replaced, including the ferries at Clarksburg, Courtland, and Freeport, which closed when the bridge over the Sacramento at Freeport opened in 1930. A handful of ferries continued to be in use well into the 1990s.

As the utilization of the Sacramento River Delta for passenger and freight shipping lines declined, commercial boats were replaced by a proliferation of recreational watercraft, particularly a budding powerboat presence. Although the Sacramento River Delta remains an important corridor for marine shipping, forming a corridor between the ports of Sacramento, Oakland, and San Francisco, the Delta is widely used by recreational watercraft.

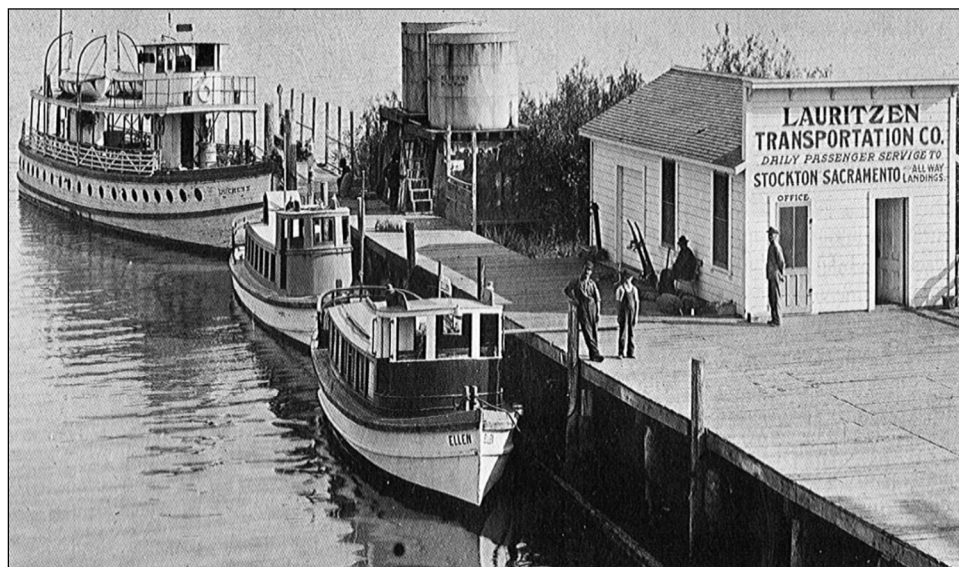


Figure 4-15. Small ferry boats of Laurentzen Transportation Company (as presented in Schell 1995).

4.1.2 California State Lands Commission Shipwreck Database

The California State Lands Commission (CSLC) maintains a comprehensive shipwreck database of nearly 1,500 shipwreck sites resting within California's state-administrated waters. Information within the inventory includes any available historical and/or descriptive details on any known shipwrecks in California waters. The CSLC Shipwreck Information, which may be accessed online

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(<https://www.slc.ca.gov/wp-content/uploads/2018/12/ShipwreckInfo.pdf>), allows researchers to search for wrecks by county in which the wrecks lie. It should be noted that, unless otherwise stated, the CSLC Shipwreck Information Database entries are the results of historical research rather than archaeological fieldwork, do not contain precise locational information pertaining to the listed wrecks, and represent an approximation of the shipwreck's location. The CSLC Shipwreck Information data table contains entries that include vessel name, vessel type, year built, year sunk, cause, owner, captain, propulsion type, and vessel dimensions. Most of the vessels do not have a complete associated dataset. Information about the vessel dimensions, tonnage, and physical properties tends to be limited in the database, and absent reference data within the table indicates that the database did not contain that information. Table 4-1 contains all the available information from the database for each vessel known to be lost in the vicinity of the Proposed API/APE.

A search of the CSLC Shipwreck Database returned many known shipwrecks within Contra Costa, Sacramento, and Solano counties. The immense area of these counties necessitated further sorting of the information to reduce the number of known wrecks to only those relevant to the area of the present investigations.

The results indicate that nine historical shipwrecks are known to have occurred within or within the immediate vicinity of the Proposed API/APE. This information is presented below in Table 4-1 and their approximate locations are illustrated in FIGURE REMOVED

Figure 4-16.

Table 4-1. Shipwrecks Listed in the Vicinity of the Proposed API/APE from the CSLC Shipwreck Information Database

| Vessel Name | Vessel Type | Year Built | Year Sunk | Cause | Owner | Captain | Propulsion | Dimensions/ Tonnage |
|---------------------------|--------------------|-------------------|------------------|--------------|--------------|----------------|-------------------|--------------------------------|
| <i>San Joaquin</i> | Motorship | - | 1951 | Collision | - | Mike Brungard | - | Length 190 ft |
| <i>Charles B. Kennedy</i> | Barge | 1878 | 1926 | Wrecked | - | - | - | 1,074 tons |
| <i>Leader</i> | Steamship | - | 1893 | Collision | - | - | - | - |
| <i>Golden Shore</i> | Steam Scew | - | 1928 | Wrecked | - | - | - | - |
| <i>Golden Shore</i> | Schooner | 1899 | 1922 | Foundered | - | - | Sail | 699 tons |
| <i>Covina</i> | Gas Screw | 1902 | 1926 | Burned | - | - | - | 87 tons |
| <i>Lizzie Theresa</i> | Gas Screw | 1876 | 1920 | Burned | - | - | - | - |
| <i>Swastika</i> | Oil Screw | 1926 | 1933 | Burned | - | - | - | - |
| <i>Colusa</i> | Steam Barge | - | 1868 | Collision | - | - | - | - |

Note: The “-” indicates that the information was not available.

FIGURE REMOVED

Figure 4-16. Shipwrecks listed in the CSLC’s Shipwreck Information Database in the vicinity of the Proposed API/APE projected on Bing Satellite image, note wreck positions are generalized to the nearest historical location mentioned within historical sources; see Table 4-1 for further information.

4.1.3 Automated Wreck and Obstructions System

The most comprehensive and up-to-date list of shipwrecks for the U.S. is the National Oceanic and Atmospheric Administration's (NOAA) Automated Wrecks and Obstructions Information System (AWOIS) and NOAA’s Electronic Navigation Chart (ENC). These databases were consulted to identify known wreck sites or obstructions within or near the current survey corridor. The AWOIS database contains information on over 10,000 wreck sites and obstructions/hangs in the coastal waters of the United States. Information within the database includes the latitude and longitude of each feature, along with any known historical and/or descriptive details. The AWOIS website, which may be accessed at <https://www.nauticalchart.noaa.gov/data/wrecks-and-obstructions.html>, allows researchers to search for wrecks based on Latitude/Longitude coordinates. An Access Database file has been projected here into Google Earth to allow the researcher to view what wrecks or obstructions are within a given area.

For the purposes of this investigation, a review of the AWOIS and ENC Wrecks databases indicated 32 charted wrecks or obstructions within 1 mi of the Proposed API/APE (Table 4-2 and FIGURE REMOVED

Figure 4-17). Many of these features are associated with one another and do not represent discrete wrecks. It must be stated that the position accuracy of AWOIS/ENC wrecks and/or obstructions is highly variable and usually poor. It also appears the AWOIS program routinely includes wrecks, obstructions, and unknowns located outside the prescribed coordinates or chart.

Table 4-2. AWOIS/ENC Wrecks within 1 mi of the Proposed Project API/APE.

| ID No. | Database | Ref. No. | Latitude REMOVED | Longitude REMOVED | Description | Charted | Associations |
|--------|--------------|----------|---------------------|----------------------|--|---------|--------------|
| 1 | AWOIS Wrecks | 51353 | | | Unknown exposed wreck (barge), first charted in 1982 | Y | - |
| 2 | ENC Wrecks | N/A | | | Unknown exposed wreck | Y | ID No. 3 |
| 3 | AWOIS Wrecks | 51372 | | | Unknown exposed wreck. First identified in 1979. Listed as visible in the same position, 3 feet above waterline in 1990. | Y | ID No. 2 |
| 4 | AWOIS Wrecks | 51372 | | | Noted as a visible wreck in 1979. Divers located the badly decomposed insignificant wreck in 1990. | N | - |

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| ID No. | Database | Ref. No. | Latitude REMOVED | Longitude REMOVED | Description | Charted | Associations |
|---------------|--------------------|-----------------|-----------------------------|------------------------------|---|----------------|---------------------|
| 5 | AWOIS Wrecks | 52004 | | | Divers located the wreck at a depth of 30 feet (PA) (position approximate) | N | - |
| 6 | AWOIS Wrecks | 53538 | | | An unknown source added wreck between 1992 and 1999, verified position in 2011. | Y | ID No. 7 |
| 7 | ENC Wrecks | N/A | | | Unknown submerged wreck. | Y | ID No. 6 |
| 8 | AWOIS Obstructions | 53539 | | | Unknown source added submerged ruins between 2000 to 2006. Evidence of ruins located in 2011. | Y | - |
| 9 | AWOIS Wrecks | 52858 | | | Unknown submerged wreck, located in 2000 | Y | ID No. 10 |
| 10 | ENC Wrecks | N/A | | | Unknown submerged wreck. | Y | ID No. 9 |
| 11 | AWOIS Obstructions | 52856 | | | Obstructions identified rising 9 feet from the seafloor by multibeam in 2000. | Y | - |
| 12 | AWOIS Wrecks | 51433 | | | Identified as a visible wreck, 30 m long, in 1950. Covered by 1.5 feet of water in 1977. | Y | - |
| 13 | AWOIS Obstructions | 52855 | | | Obstruction was identified on multibeam in 2000, rising 6.4 feet from the seafloor. | Y | - |
| 14 | AWOIS Wrecks | 53540 | | | Unknown exposed wreck. An unknown source added a visible wreck between 1965 to 1982, verified in 2006. | Y | ID No. 15 |
| 15 | ENC Wrecks | N/A | | | Unknown exposed wreck. | Y | ID No. 14 |
| 16 | AWOIS Wrecks | 51443 | | | Unknown exposed wreck (barge), approximately 40 m long, first entered in 1979. Notes as 3-4 feet exposed in 1991. | Y | - |

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| ID No. | Database | Ref. No. | Latitude REMOVED | Longitude REMOVED | Description | Charted | Associations |
|---------------|-----------------|-----------------|-----------------------------|------------------------------|--|----------------|---------------------|
| 17 | AWOIS Wrecks | 51444 | | | Unknown exposed wreck (barge), first entered in 1977. | Y | ID No. 18 |
| 18 | ENC Wrecks | N/A | | | Unknown exposed wreck | Y | ID No.17 |
| 19 | AWOIS Wrecks | 51445 | | | Unknown exposed wreck (barge). First entered 1977, noted as visible 5.5 feet in 1979. | Y | ID No. 20 |
| 20 | ENC Wrecks | N/A | | | Unknown exposed wreck. | Y | ID No. 19 |
| 21 | AWOIS Wrecks | 51446 | | | Unknown exposed wreck (barge), first entered in 1977. Noted as 4.5 ft, exposed in 1979. | Y | ID No.22 |
| 22 | ENC Wrecks | N/A | | | Unknown exposed wreck. | Y | ID No. 21 |
| 23 | AWOIS Wrecks | 51447 | | | An unknown submerged wreck was first charted in 1953. Identified as a submerged barge, 14.3 feet deep, in 1977. | Y | ID No. 24 |
| 24 | ENC Wrecks | N/A | | | Unknown submerged wreck. | Y | ID No. 23 |
| 25 | ENC Wrecks | N/A | | | Unknown submerged wreck. | Y | - |
| 26 | ENC Wrecks | N/A | | | Unknown exposed wreck. | Y | - |
| 27 | AWOIS Wrecks | 51437 | | | An unknown wreck, a wooden dredge, entered in 1977 as an exposed wreck. No longer visible at the charted position in 1982. | N | - |
| 28 | AWOIS Wrecks | 51438 | | | Unknown exposed wreck (barge), charted as visible in 1977, uncovered 6.5 ft | Y | - |
| 29 | ENC Wrecks | N/A | | | Unknown exposed wreck | Y | - |
| 30 | ENC Wrecks | N/A | | | Unknown submerged wreck | Y | - |
| 31 | AWOIS Wrecks | 51463 | | | An exposed wreck entered in 1977, a | Y | ID No. 32 |

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| ID No. | Database | Ref. No. | Latitude REMOVED | Longitude REMOVED | Description | Charted | Associations |
|--------|------------|----------|---------------------|----------------------|--|---------|--------------|
| | | | | | houseboat composed of wood superstructure on metal pontoons. | | |
| 32 | ENC Wrecks | N/A | | | Exposed wreck | Y | ID No. 31 |

Note: The “-” indicates that the information was not available.

FIGURE REMOVED

Figure 4-17. AWOIS and ENC database entries located within 1 mi of the Proposed API/APE; see Table 4-2 for additional information.

4.1.4 Other Shipwreck Sources

“Maritime and Underwater Archaeology of the Pacific Coast” by James Delgado (2002) provides a chronological-arranged overview of selected maritime archaeological sites, primarily focusing on shipwrecks, along the Pacific Coast of the United States. Relevant to the present investigation, is a section discussing sites dating between 1849 and 1855, which contains a discussion of archaeological investigations and historical backgrounds of shipwrecks within the Sacramento River, principally focusing on wrecks along the Sacramento waterfront. No vessel loss is listed in Delgado’s work associated with the Proposed API/APE.

A more detailed publication, in reference to the Proposed API/APE, is *A Map and Record Investigation of Historical Sites and Shipwrecks Along the Sacramento River Between Sacramento City and Sherman Island*, published by the California State Lands Commission in 1988. This work provides a detailed historical overview of the Sacramento River Valley and the history of shipping on the river, as well as a comprehensive list of sunken vessels within the Sacramento River between Sacramento and Sherman Island. Though this volume focuses primarily on shipwreck sites within the Sacramento River above the Proposed API/APE, it identifies no less than three historical shipwrecks that were lost within or immediately adjacent to the Proposed API/APE. Numerous shipwrecks are listed as having occurred within the Sacramento River with no specific locations provided. Without further information to determine their location relative to the Proposed API/APE, these shipwrecks have been omitted from Table 4-3. As historical sources for the location of vessel losses are often imprecise, Note: The “-” indicates that the information was not available.

Table 4-4 presents an additional five vessels lost in the vicinity of the Proposed API/APE, but which, due to the vagueness of their locational descriptions, may or may not be pertinent to the Proposed API/APE of the present investigation.

Data Tables 4-3 and 4-4 contain entries that include vessel name, vessel type, year built, year sunk, cause, owner, cargo, and vessel dimensions. Most of the vessels do not have a complete associated dataset. Information about the vessel dimensions, tonnage, and physical properties tends to be limited in the datasets, and absent reference data within the table indicates that the dataset did not contain that information. Tables 4-3 and 4-4 contain all the available information from the datasets for each vessel known to be lost in the vicinity of the Proposed API/APE.

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Table 4-3. List of Vessels Known to be Lost Within 1 mi of the Proposed Project API/APE

| Vessel Name | Vessel Type | Year Built | Date Sunk | Cause | Owner | Cargo | Dimensions/ Tonnage |
|--------------------|--------------------|-------------------|------------------|--|--------------|----------------|--------------------------------|
| <i>Colusa</i> | Steam Barge | - | 10/19/1868 | Sunk in collision with steamboat <i>Capitol</i> near Collinsville with 2 lives lost. | - | Corn and Grain | - |
| <i>Covina</i> | Gas Screw | 1902 | 7/30/1926 | Burned at Collinsville | - | - | 87 Tons |
| <i>Miner</i> | Sternwheeler | 1850 | 10/9/1851 | Burned at New York of the Pacific | - | - | 75 Tons |

Note: The “-” indicates that the information was not available.

Table 4-4. List of Vessels Lost Potentially Within or Near the Proposed API/APE

| Vessel Name | Vessel Type | Year Built | Date Sunk | Cause | Owner | Cargo | Dimensions/ Tonnage |
|-----------------------|--------------------|-------------------|------------------|---------------------------|--------------|----------------|--------------------------------|
| <i>Annie Rolph</i> | - | - | 12/23/1938 | Burned at Shermans Island | - | - | - |
| <i>James Rolph</i> | Sail | 1844 | 12/27/1938 | Burned at Shermans Island | - | - | 228-ft, built at Liverpool |
| <i>Lizzie Theresa</i> | Gas Screw | 1876 | 7/10/1920 | Burned on Suisun Bay | - | - | - |
| <i>S.M. Whipple</i> | - | - | 11/11/1875 | Burned on Suisun Bay | - | - | - |
| <i>Villa</i> | - | - | 1/24/1869 | Capsized in Suisun Bay | - | Railroad Steel | - |

Note: The “-” indicates that the information was not available.

4.2 Cartographic Review

Another excellent tool for identifying shipwrecks is a review of historic navigation maps and charts for the area. Often noting shipwrecks, obstructions, and other various hazards for the mariner, many of these charts can be accessed from NOAA's Office of Coast Survey's Historical Map and Chart Collection (www.historicalcharts.noaa.gov/historicalsearch), and others are found in various repositories, publications, or websites. The NOAA website allows the researcher to specify the area or region of interest and then review all available maps for that area. Another valuable utility provided by this site is the virtual magnification feature, which allows the researcher to zoom in and out of specific areas. Multiple nautical charts were examined regarding the API/APE, and the charts which best represented the area or contained valuable information are presented below in chronological order.

The earliest navigational chart of the API/APE was published in 1828 (Chart No. 591-00), illustrated in Figure 4-18. Although the chart encompassed the entirety of San Francisco Bay, it provided toponyms for Suisun Bay, Knox Island (now Chipps Island), Jones Island (now Van Sickle Island), the Sacramento River, and the San Joaquin River. No cultural features (i.e., shipwrecks) were charted within the API/APE itself, but the "Projected Town of New York" is noted immediately south of the API/APE at the present site of the city of Pittsburg.

Chart No. 1706-00, published in 1850 (Figure 4-19) was the first chart of the API/APE in which the scale used, 1:75168, provided detailed bathymetric data for the upper reaches of Suisun Bay and the confluence of the Sacramento and San Joaquin Rivers. A large shoal, noted as Tongue Shoal, was demarcated on its northern side by a series of islets, named the Chain Islets, obstructing the mouth of the Sacramento River. Narrow channels of navigable water allowed passage along the west and north side of this shoal, or through a narrow, shallow channel east of the shoal. These shoals presented a significant enough hazard to navigation that the charts included two panoramic insets to assist mariners in aligning their vessels in the channel during passage through the shoals. The concentration of sounding measurements on the chart suggests that navigation followed the Sacramento River and along the southernmost branch of the San Joaquin River, later named the New York Slough, with the main branch of the San Joaquin being likewise navigable. In addition to those mentioned on previous charts, the chart displayed toponyms for Gwin Island (Browns Island), Ruckels Island (Winter Island), Sherman Island, and Burnett Island (Montezuma Island), as well as the Tongue and Fraser Shoals and numerous points within the area of the API/APE. No cultural features (i.e., shipwrecks or navigational aids) were represented within or adjacent to the API/APE.

Published in 1867, Chart No. 626-01 (Figure 4-20) illustrated the beginnings of an ongoing morphological change to the eastern extent of Tongue shoal at the northern extent of the API/APE. The Chain Islets, once situated along the northern boundary of the shoal, were no longer charted, but had instead aggregated to form Chain Island along the shoal's eastern boundary. The shallow channel to the east of Tongue Shoal had shifted westward. The waterways to the west and north of Tongue shoal remained navigable. The 1867 chart was the first to identify the southern branch of the San Joaquin River and the branch extending between Brown's Island and Winter Island as the New York and Middle Sloughs, respectively. Furthermore, toponyms within the vicinity of the API/APE changed to approximate their modern names, with Brown's Island replacing Gwin Island, Chipps Island replacing Knox Island, Van Sickle's Island replacing Jones Island, and Montezuma Island replacing Burnett Island. Although no cultural features were represented within or adjacent to the API/APE, the settlement of Collinsville appeared north of the API/APE. The village of New York appeared to the south, with the extension of a railway to a pier into the New York Slough; the

settlement of Pittsburg Landing also had a similar railroad pier, appearing at the upper end of the New York Slough.

As illustrated in Chart No. 5526-1758C (Figure 4-21), published in 1883, the eastern channel through the Tongue Shoal filled in and the shoal again expanded, necessitating the use of the western channel to access the Sacramento River. By 1883, the first navigational aids had been placed in the vicinity of the API/APE, delimiting the eastern side of the channel within upper Suisun Bay as well as the placement of beacons at the head and foot of the Middle Ground within the mouth of the San Joaquin River.

Much of the increased shoaling at the mouth of the Sacramento River had reversed by 1910 as illustrated by Chart No. 5534-3609C (Figure 4-22). On this chart, a shallow eastern channel through Tongue Shoal had reopened, and increased shoaling to the west resulted in the expansion of Chain Island itself and the removal of Tongue Shoal from the chart. The 1918 chart indicated a substantial increase in settlement along the southern shore of the New York Slough, with numerous piers and docks appearing between Pittsburg, formerly New York, and Pittsburg Landing alongside increasing industrial structures. At the western extent of the survey area, on the southern shore of Chipp's Island and the opposite shore at Mallard Slough, a rail line extended to the shoreline with a ferry route and cable extending across the channel between the piers. No additional cultural features (i.e., shipwrecks) were charted within or near the API/APE.

Published in 1948, Chart No. 5534-9 (Figure 4-23), illustrated that, by that date, the shoaling at the mouth of the Sacramento River had further regressed, and a navigational channel passing to the east of Chain Island had deepened, with controlling depths of 10 feet within API/APE. A channel, dredged to a least depth of 30 ft, was cut through the New York Slough accessing the San Joaquin River. The main branch of the San Joaquin River remained navigable with a "Berthing Area" delimited west of the Fraser Shoal and an anchorage to the east within the river. The 1948 chart was the first to demarcate a "Cable Area" extending north to south across the river to the west of the API/APE, and to illustrate exposed wrecks within the API/APE. Three exposed wrecks are charted, north of New York Point within the API/APE, east of New York Point, and at Point Emmet at the foot of the New York Slough.

By 1958, the entrance to the Sacramento River had deepened, and the channel to the west of Chain Island had begun to shoal, as illustrated by Chart No. 5534-25 (Figure 4-24). At the southern end of the API/APE, a T-shaped pier was constructed on the north side of New York Point. The 1958 chart retained the exposed wreck west of New York Point, with the previously exposed wreck at Emmet Point being changed to a submerged wreck. The wreck charted east of New York Point in 1948 was not charted. Two new wrecks were first charted in 1958, an exposed wreck along the western shore of Winter Island, south of San Joaquin Point, and a new submerged wreck along the eastern shore of Van Sickle Island, both outside the API/APE.

Published in 1967, Chart No. 5534-29-1967 (Figure 4-25) first illustrated the Sacramento Ship Channel within the Sacramento River. On the San Joaquin River, the New York Slough channel remained the principal channel, with navigational aids and the demarcated "Berthing Area" in the main branch of the river being removed from charts. All charted wrecks appearing in the 1958 charts were retained in the 1967 chart. The railroad and ferry between Mallard Island and Chipp's Island at the western end of the API/APE are illustrated as having been abandoned, with the piers being labeled as ruins extending into Suisun Bay. The cable area extending between the ruins was retained.

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Chart No. 18656-41, published in 1979 (Figure 4-26) charted eight additional wrecks adjacent to the API/APE. These exposed wrecks included: one along the south shore of the New York Slough, one on the western shore of Winter Island, two on the eastern shore of Van Sickle Island, and three within the inlet at Collinsville opposite Montezuma Island. The submerged wreck at Point Emmet was no longer charted.

Chart No. 18656-45-1983 (Figure 4-27), published in 1983, illustrated many of the previously exposed wrecks as submerged wrecks. Three wrecks were charted for the first time: one exposed wreck near the northern limit of the API/APE, east of Montezuma Island; an exposed wreck on the east shore of Van Sickle Island, south of the previously charted wrecks; and a submerged wreck(s) along the south shore of Chipps Island. By 1990, all wrecks along Van Sickle Island and at Collinsville were charted as submerged wrecks (Chart No. 18659-7)(Figure 4-28).

By 1996 the wrecks within the New York Slough and the three westernmost wrecks east of Collinsville were no longer charted (Figure 4-29). Chart No. 18659-12, published in 1996, displayed four previously uncharted shipwrecks: an exposed wreck on the eastern shore of Van Sickle Island, south of the previously charted wrecks; an exposed wreck on the western bay of Winter Island; an exposed wreck on the northeastern shore of Winter Island; and a submerged wreck on the northeast corner of Fraser Shoal.

The most recent navigational chart of the API/APE was published in 2022 (Chart 18659-16)(Figure 4-30). The 2022 charts retained all charted wrecks that had appeared on the 1996 charts. Two wrecks are charted within the API/APE. Two obstructions were located within or near the southeastern boundary of the API/APE, along with several submerged pilings and pilings in shallow water off New York Point.

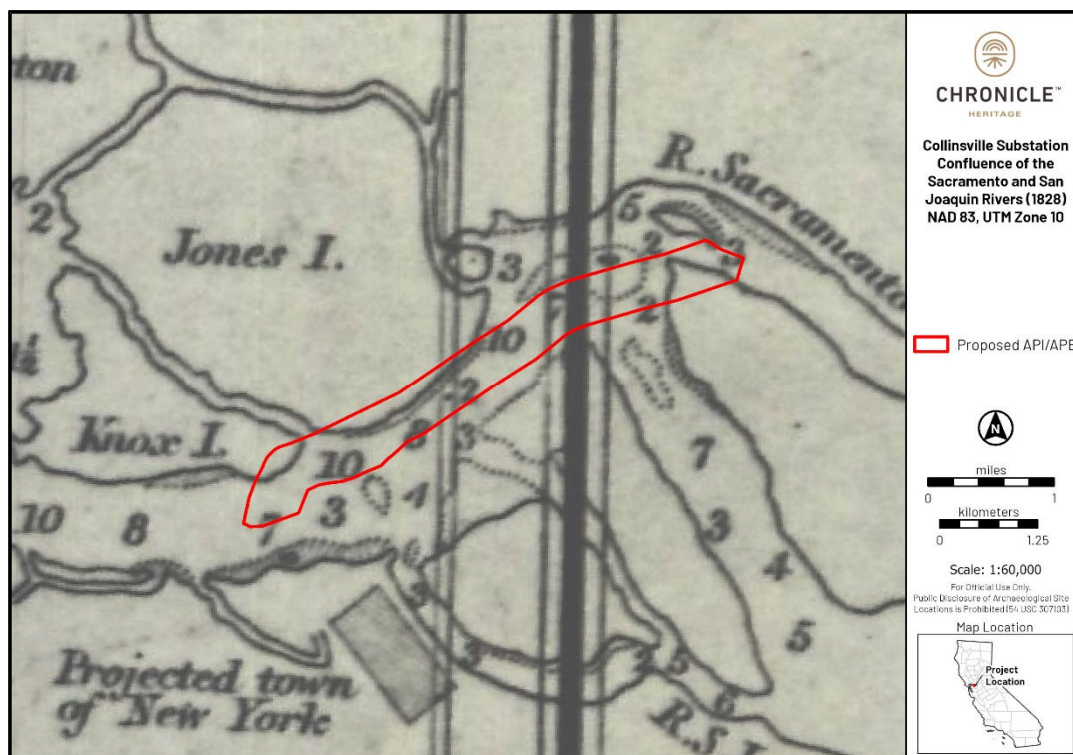


Figure 4-18. 1828 chart excerpt showing the Proposed API/APE (Chart No. 591-00-1828 from NOAA's Historical Map and Chart Collection).

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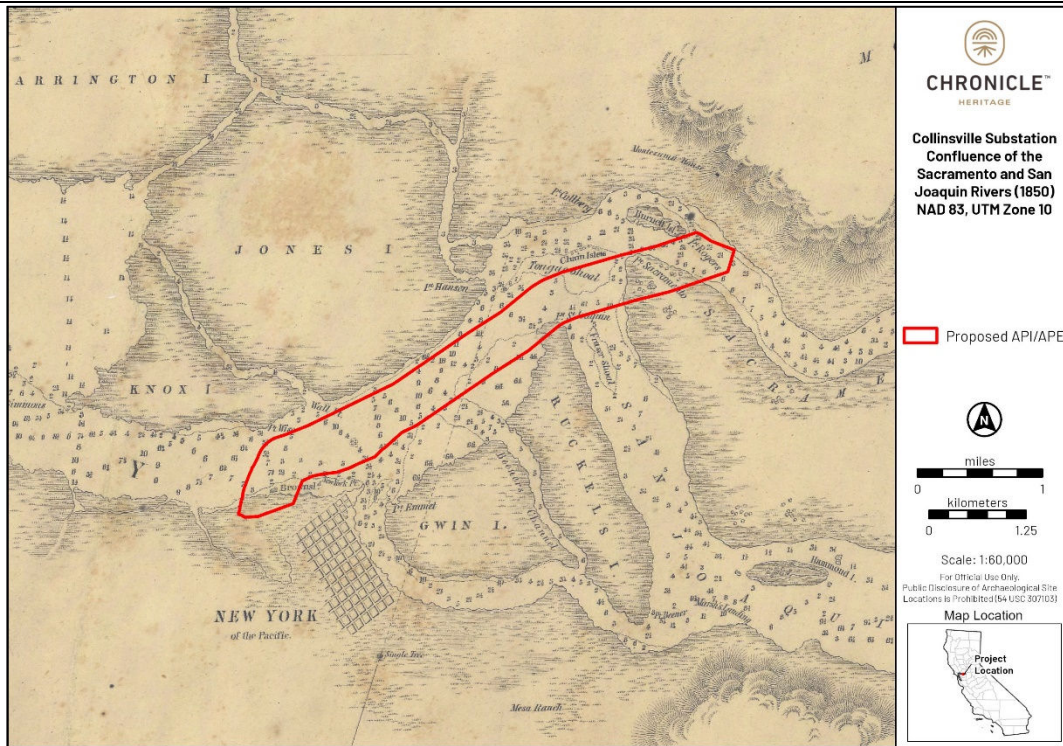


Figure 4-19. 1850 chart excerpt showing the Proposed API/APE (Chart No. 1706-00-1876 from NOAA's Historical Map and Chart Collection).

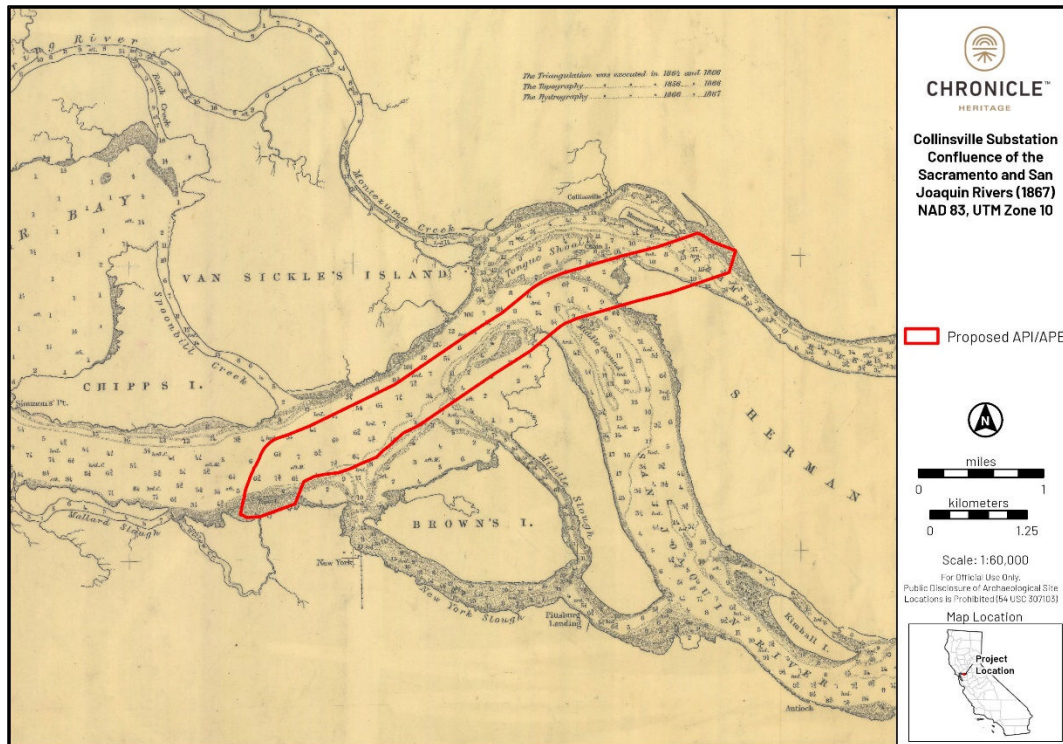


Figure 4-20. 1867 chart excerpt showing the Proposed API/APE (Chart No. 626-01-1867 from NOAA's Historical Map and Chart Collection).

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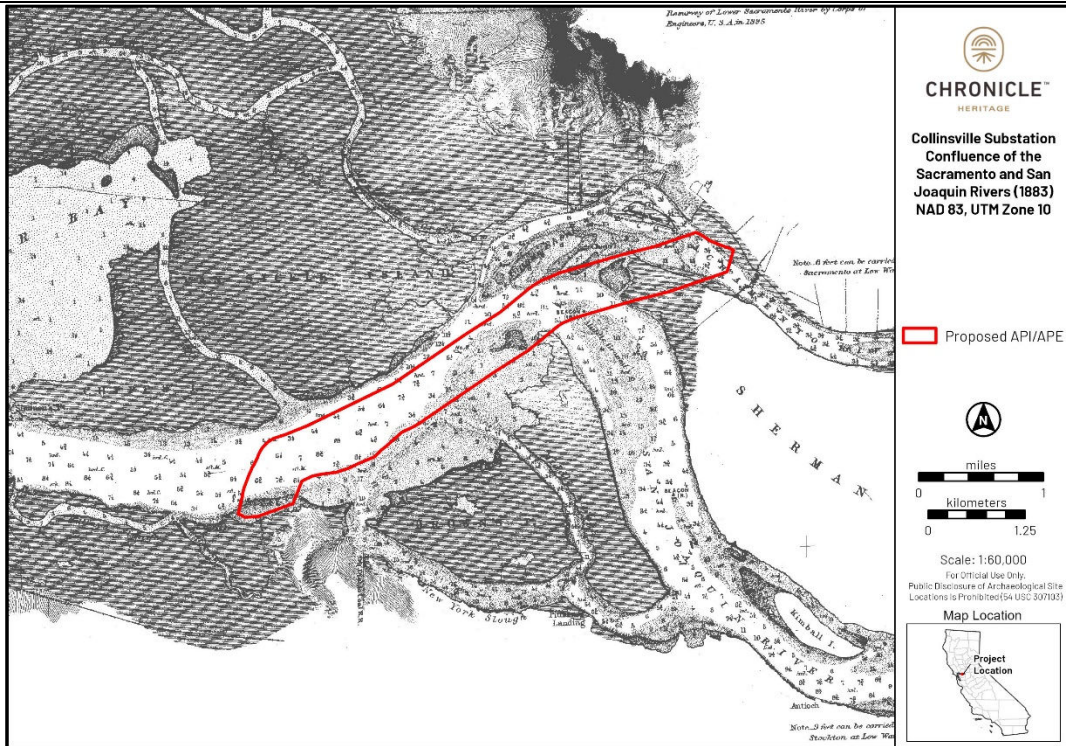


Figure 4-21. 1883 chart excerpt showing the Proposed API/APE (Chart No. 5526-1758c-1883 from NOAA's Historical Chart Collection).

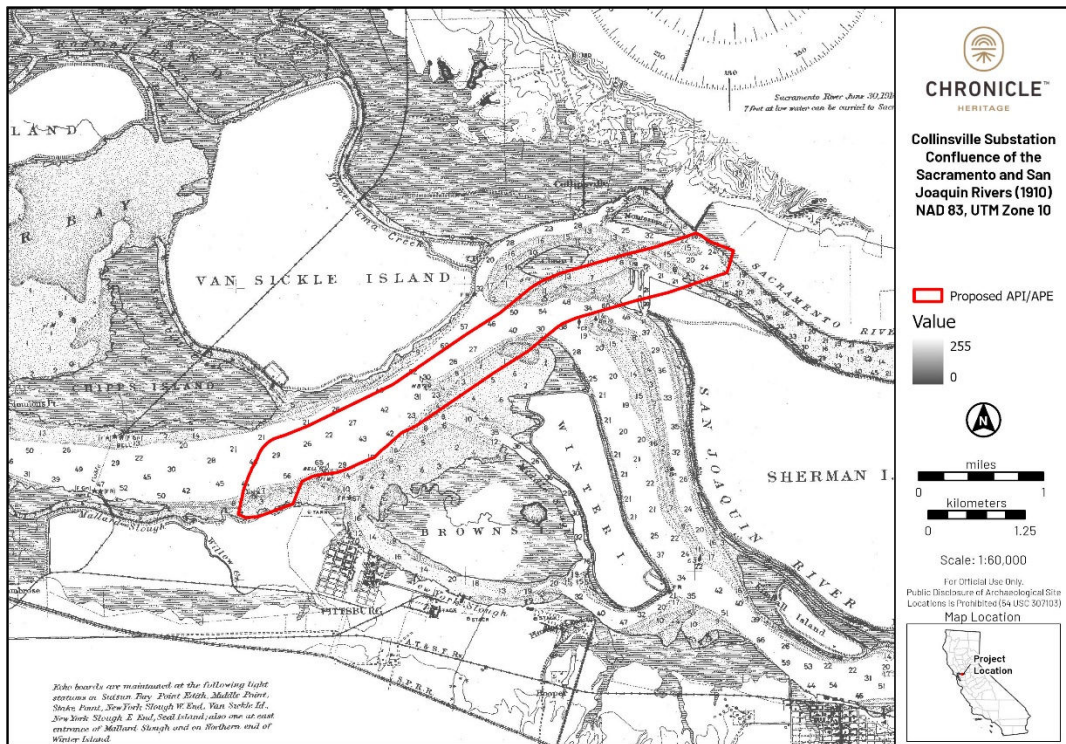


Figure 4-22. 1910 chart excerpt showing the Proposed API/APE (Chart No. 5534-3609C-1916 from NOAA's Historical Map and Chart Collection).

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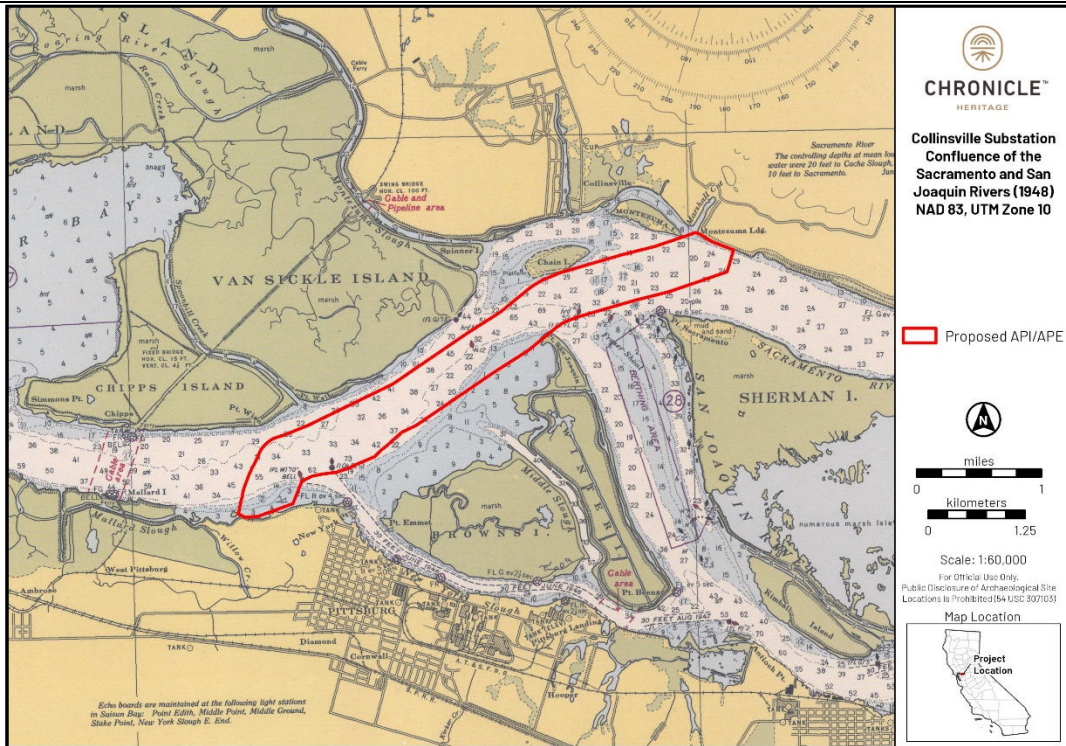


Figure 4-23. 1948 chart excerpt showing the Proposed API/APE (Chart No. 5534-9-1948 from NOAA's Historical Map and Chart Collection).

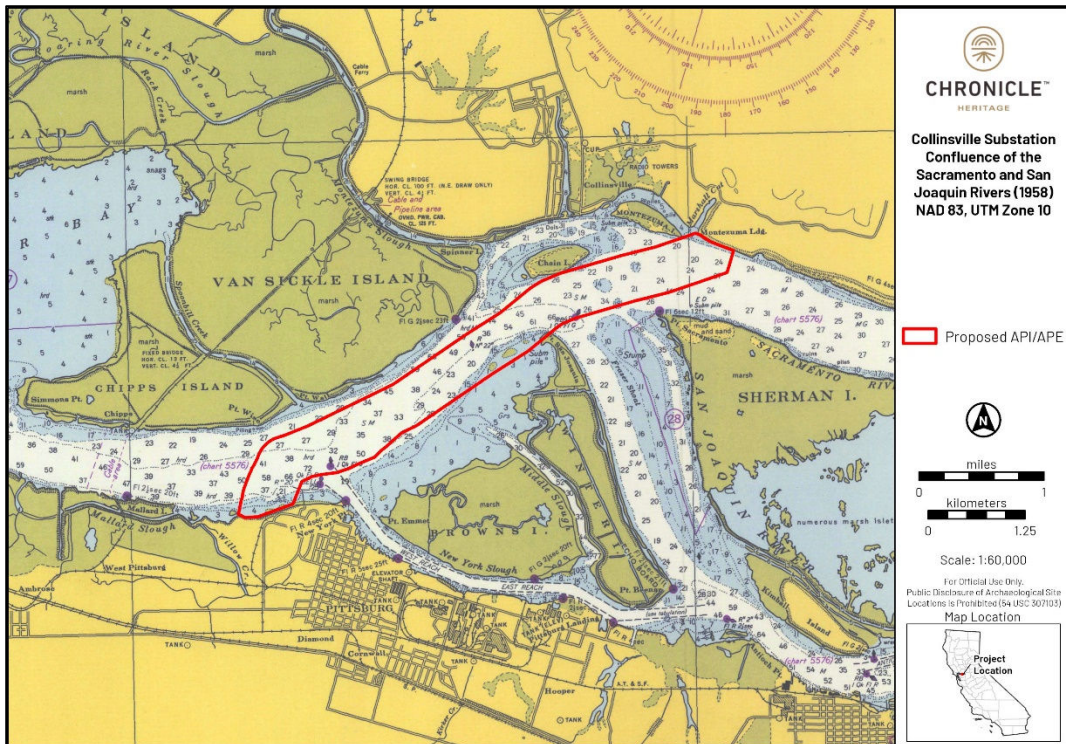


Figure 4-24. 1958 chart showing the Proposed API/APE (Chart No. 5534-25-1958 from NOAA's Historical Map and Chart Collection).

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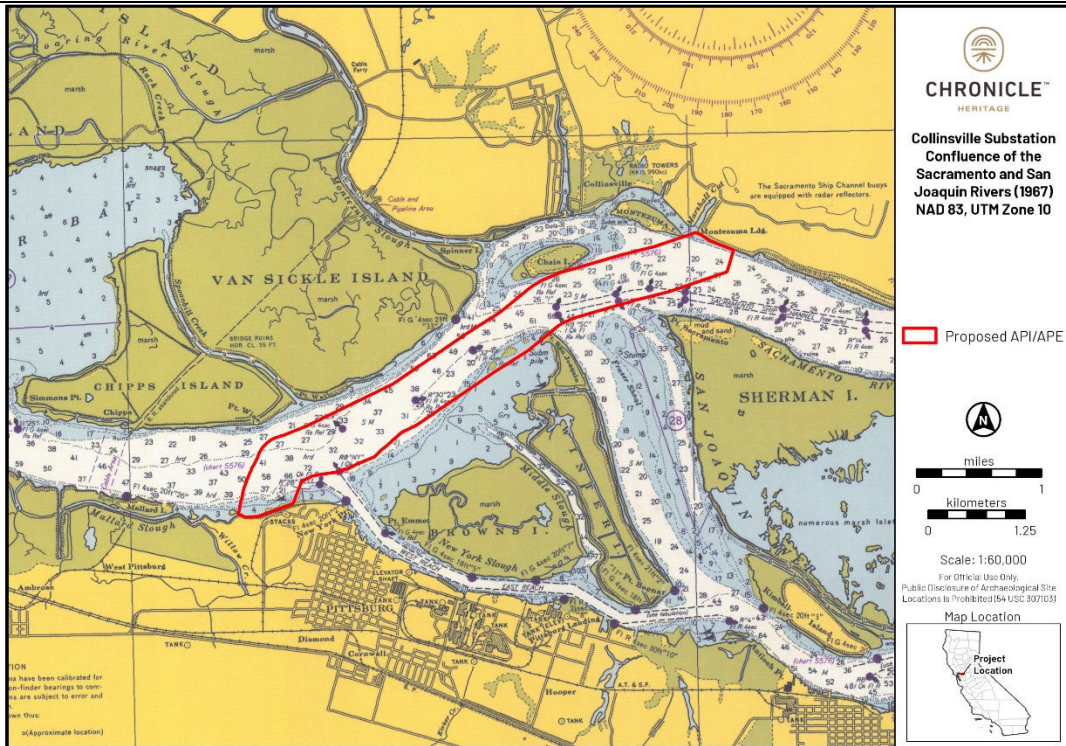


Figure 4-25. 1967 chart excerpt showing the Proposed API/APE (Chart No. 5534-29-1967 from NOAA's Historical Map and Chart Collection).

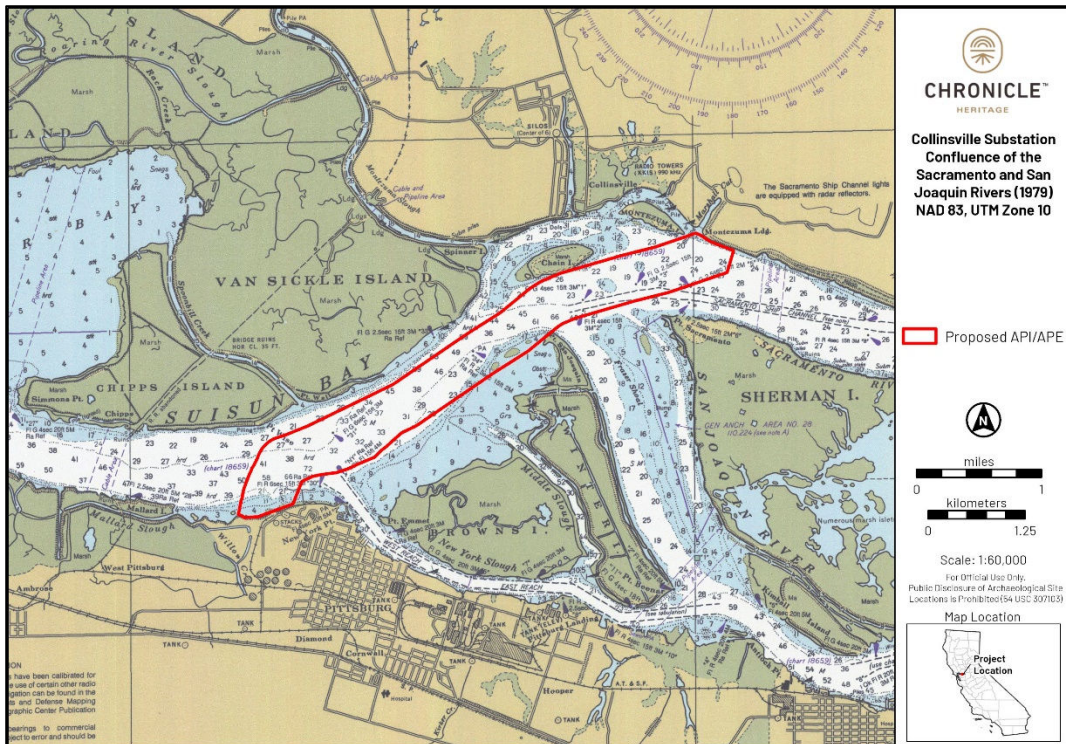


Figure 4-26. 1979 chart excerpt showing the Proposed API/APE (Chart No. 18656-41-1979 from NOAA's Historical Map and Chart Collection).

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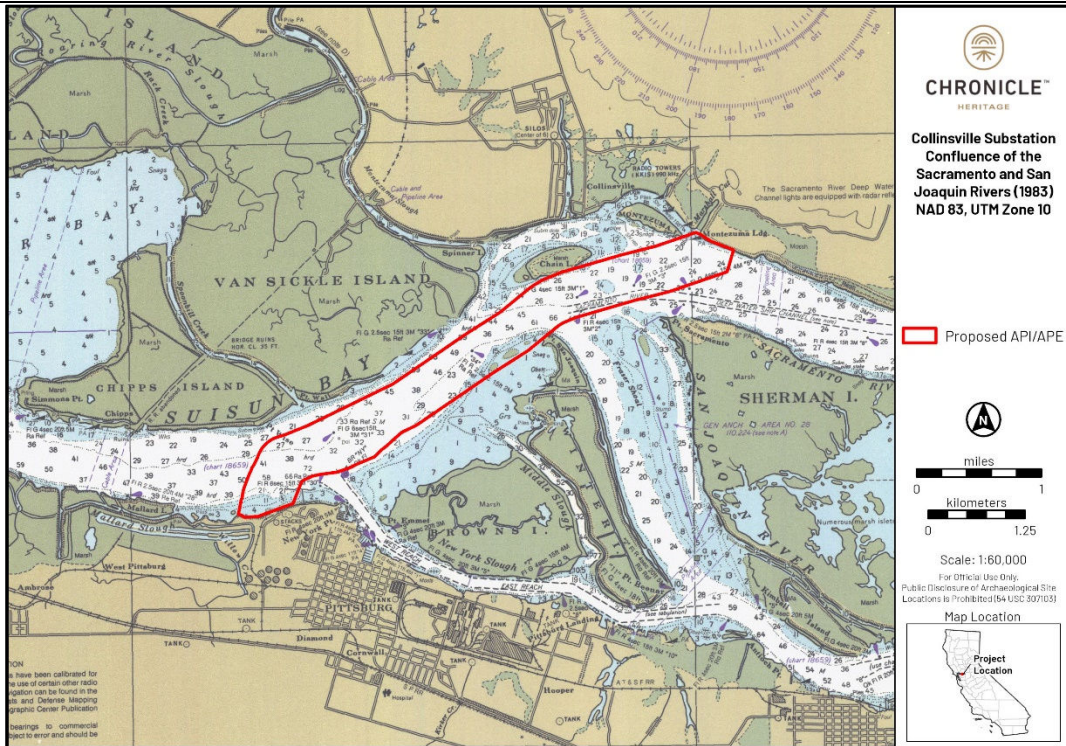


Figure 4-27. 1983 chart excerpt showing the Proposed API/APE (Chart No. 18656-45-1983 from NOAA's Historical Map and Chart Collection).

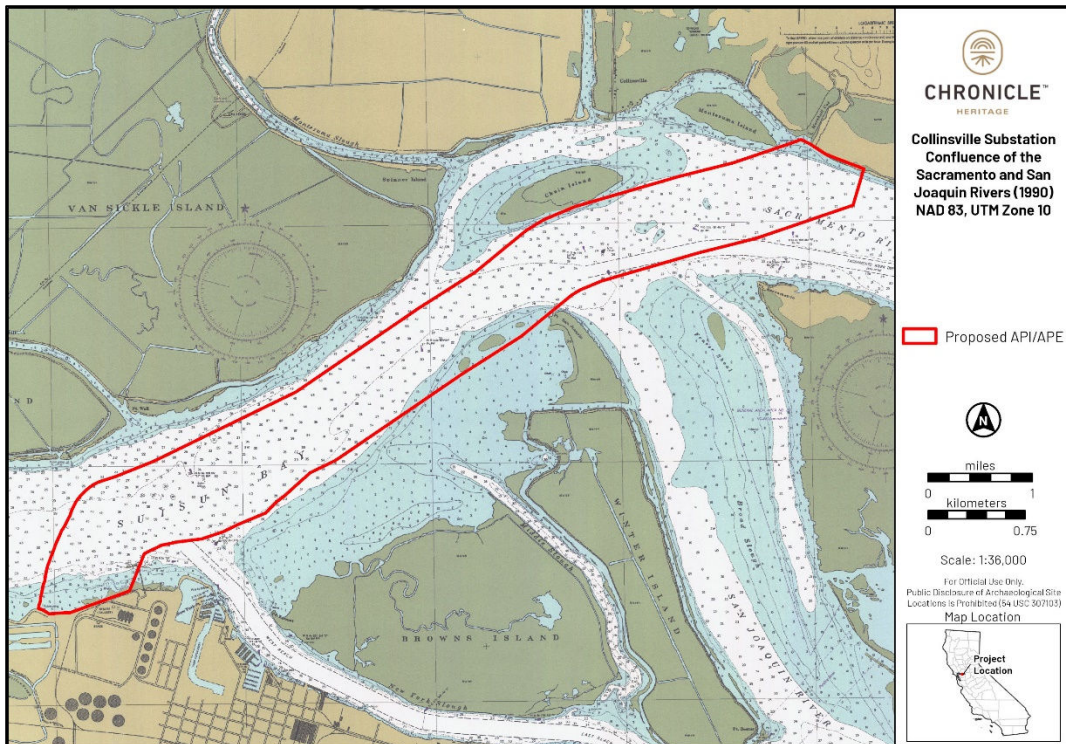


Figure 4-28. 1990 chart excerpt showing the Proposed API/APE (Chart No. 18659-7-1990 from NOAA's Historical Map and Chart Collection).

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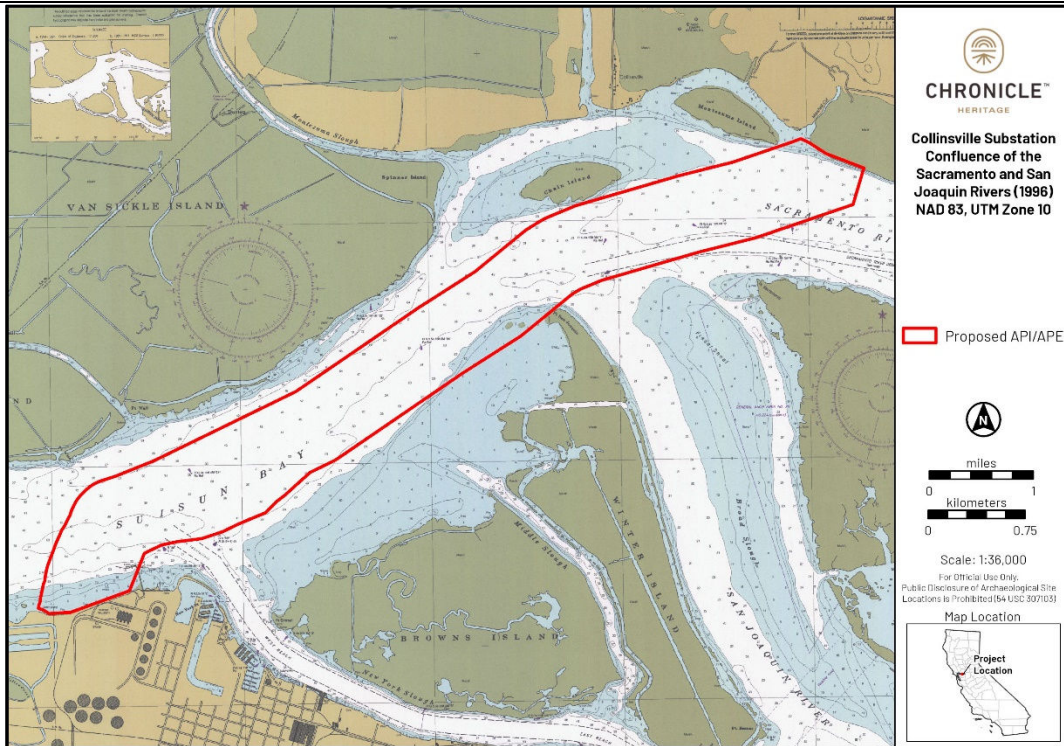


Figure 4-29. 1996 chart excerpt showing the Proposed API/APE (Chart No. 18659-16-2022 from NOAA's Historical Map and Chart Collection).

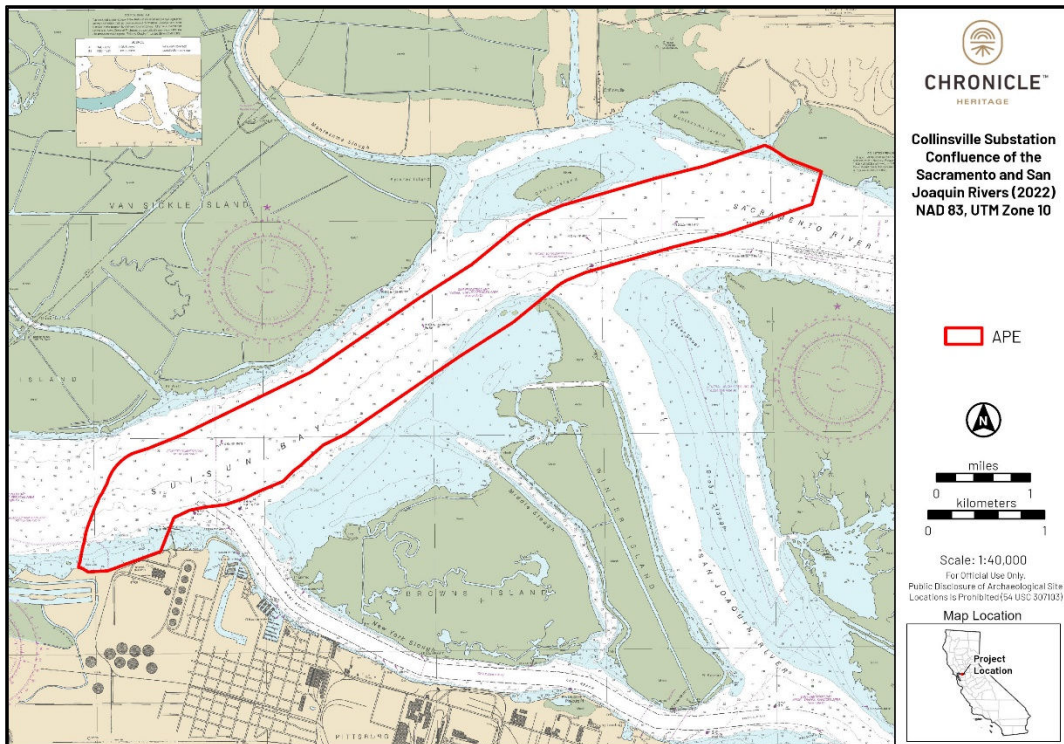


Figure 4-30. 2022 chart excerpt showing the Proposed API/APE (Chart No. 18659-12-1996 from NOAA's Historical Map and Chart Collection).

5 Methods

5.1 Submerged Remote Sensing Survey

Remote sensing data employed in the assessment for the presence or absence of submerged cultural resources within the Proposed Project corridor was collected by the California based hydrographic survey company, eTrac, Inc. Established in 2003 as a hydrographic and geophysical survey, vessel positioning, and instrumentation firm, eTrac has a fleet of over 20 survey vessels and is staffed with professionally licensed land surveyors and ACSM/THSOA (American Congress on Surveying and Mapping/The Hydrographic Society of America) certified hydrographers, and eTrac's projects are performed at the highest level of quality and detail that the industry demands.

Conducted from 17 September to 26 October under CSLC Low Energy Geophysical Survey Permit No. 9235, the geophysical survey included dual frequency side scan sonar, magnetometer, subbottom profiler, and a high resolution multibeam echosounder. Conducted to map the seafloor and sub-surface conditions, obstructions, and possible installation constraints of the cable route, the survey covered a 2,000-foot-wide corridor which encompassed the submarine cable route along its center line. Located in the center of the survey corridor, the submarine segment would consist of up to six 230 kV tri-core cables, each spaced approximately 70 feet apart for a width of approximately 420 feet (Survey of a 2,000-foot-wide area was required for repositioning of the centerline up or downstream in the event of any recorded hazards or possible constraints within the conductor corridor (i.e., boulder areas, etc.). The depth of the Proposed API/APE ranged from -0.5 to -104 feet MLLW (Mean Lower Low Water)(Figure 5-1). The depths in the southern portion of the corridor, near the Pittsburg landing site, have the deepest depths within a 104 feet depression located in the Stockton Deep water ship channel. The northern portions of the corridor, near Collinsville, have shallower depths (Appendix B). The submarine cables are proposed to be installed beneath the bay and riverbed to a depth of approximately 6 and 15 feet using jetting technology.



Figure 5-1. Depths within the Proposed API/APE, as presented in eTrac's 2023 Marine Geophysical Report (Appendix B).

A comprehensive study, the recorded survey data was assessed by Chronicle Heritage personnel for quality, and then subsequently processed and analyzed for the presence or absence of submerged cultural resources. In addition to the data, Chronicle Heritage also had access to eTrac's Survey Report which is attached as Appendix B. It should be stated that Chronicle Heritage often employs data from hydrographic "Hazard, Preconstruction" surveys to produce the associated submerged cultural resources report, as the equipment suites and data sets mirror

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those required for submerged cultural resources investigations, thereby negating the need for and attendant costs of duplicate surveys. Furthermore, the survey data acquired by the hydrographic company is often more robust and includes data not required for or obtained by the cultural survey such as multibeam data which is often far superior to side scan sonar in image resolution and position accuracy such as was conducted for this survey.

Chronicle Heritage personnel reviewed eTrac's survey methods to ensure that they met state and government specifications for cultural resources survey. Guiding Chronicle Heritage's assessment of eTrac's methods as well as subsequent in-house processing, analysis and presentation, Chronicle Heritage's maritime team developed a Research Design that identified survey methods and protocols which are based on survey requirements for numerous U.S. Army Corps Districts on the East and Gulf Coasts and inland Rivers and Lakes, and are employed for Section 404 Clean Water Act permit surveys (i.e., New York, Philadelphia, Wilmington, Charleston, Savannah, Jacksonville, Mobile, Tulsa, Galveston, St. Paul, etc. Appendix A).

5.1.1 Personnel

All personnel involved with the remote sensing survey had the requisite experience to complete the survey effectively and safely as proposed. The remote sensing survey was conducted by eTrac, Inc., a Woolpert Company, under CSLC Low Energy Geophysical Survey Permit No. 9235. Nicholas George, C.H. (Certified Hydrographer) served as project manager and oversaw the execution and completion of the remote sensing survey while acting as liaison between eTrac, Inc., and Chronicle Heritage. Steven James, M.A., RPA (Register of Professional Archaeologists) served as the Principal Investigator for the underwater survey. Regarding the analysis of data for potentially significant submerged cultural material, Rikki Oeters-Milewski, M.A., RPA served as a Qualified Maritime Archaeologist (QMA) and was assisted by Justin Milewski, ABT for the duration of the project. Matthew Lowe, M.A., RPA served as co-author of the revised report.

5.1.2 Remote Sensing Survey Equipment

The remote sensing equipment employed by eTrac for the submerged remote sensing survey were the magnetometer (to detect ferrous materials), side-scan sonar (to create images of the bottom), and the subbottom profiler (to reconstruct the structure of the underlying sediment beds). Locational control was conducted with Differential Global Positioning System (DGPS) technology and an Ultrashort Baseline (USBL). Data collection was performed in Hypack 2022 while analysis of the data was conducted with Hypack 2022, SonarWiz 7, and MagPick.

Due to the variable depths of the Proposed API/APE and the towed nature of the side-scan sonar and magnetometer, the height above bottom for both instruments was continually monitored and adjusted as necessary. Survey crews ensured the side-scan sonar was positioned at a depth of 10 to 20 percent the instrument range above the riverbed. The magnetometer was kept at a height of no more than 6 meters (m) above the riverbed. In areas that were shallower than 6 m, the height of the magnetometer was adjusted so that it would not contact the riverbed. The subbottom profiler was pole mounted on the stern of the vessel using a Universal Sonar Mount (USM), once deployed, the height of the instrument was not adjusted (Appendix B).

Differential Global Positioning System

A primary consideration in any remote sensing survey is positioning. Accurate positioning is essential during the running of survey tracklines and returning to recorded locations for

refinement or diver analyses. Positioning was accomplished on this project using an Applanix POS MV Oceanmaster V5 navigation and inertial compensator with dual-antenna Global Navigation Satellite System (GNSS), with high-speed binary data streams supplied to the navigation computer (Figure 5-2).



Figure 5-2. Applanix POS MV OceanMaster V5 navigation and inertial compensator used during the investigation.

The Applanix POS MV Oceanmaster blends data with angular rate and acceleration data from its inertial motion unit (IMU) with heading from the GPS Azimuth Measurement System (GAMS) to produce a robust and accurate full six-degrees-of-freedom position and orientation solution. Thus, the unit can combine Global Navigation GNSS and inertial data and is perfect for conducting marine remote sensing surveys, which rely on these data streams for accurate positioning and orientation of survey instruments. The unit achieves true heading by its dual antenna, eliminating magnetic calibration issues in areas with unreliable magnetic conditions. The Applanix POS MV Oceanmaster integrates real-time corrections from base stations (RTCM) and satellites (WAAS), allowing for sub-meter accuracy during the survey (Trimble 2019).

The survey was planned in NAD83 California Zone 2, U.S. feet, using the 2011 adjustment and all side-scan, subbottom, and magnetometer target data were converted to this grid. The navigation data streams were in a geographic format, WGS84 (i.e., latitude, longitude). The raw data from the side-scan and subbottom devices are archived in this format, and the magnetic data are in the projected format. Navigation was conducted with Qinsy. Qinsy was written specifically for marine survey applications. Positional data for the towed side-scan sonar and magnetometer was provided by the USBL acoustic transducer, which was mounted on the starboard side of the stern USM mount pole mount. A cable counter measured the length of cable payout and was used to estimate the layback position behind the vessel for the towed instruments. The USBL was positioned on the fixed sonar mount and the beacon was positioned on the tethered cable of the towed equipment to track the position of the side-scan sonar and the magnetometer. A measurement was recorded from the acoustic center of the towed equipment to the tow point as well as from the beacon to the tow point. These two measurements were entered into Qinsy and calibrations were run to determine angular offset values of the USBL. All positioning coordinates are based on the position of the DGPS antennae relative to the sensor location and the USBL. This layback information is critical for the accurate positioning of targets in the data analysis phase and for relocating any targets for additional investigations (Appendix B).

Magnetometer

Magnetometers measure the intensity of magnetic forces with a sensor that measures and records the ambient (background) magnetic strength and, if present, deviations from the ambient background (anomalies) caused by magnetic fields of ferrous objects and other sources, such as high voltage cables (Breiner 1973). These measurements are recorded in nanoteslas (nTs), the standard unit of magnetic intensity.

The success of the magnetometer in detecting anomalies in local magnetic fields has resulted in the instrument being a principal remote sensing tool of maritime archaeologists because anomalies can represent components of shipwrecks and other historical debris or objects hazardous to dredging or navigation. Although it is not possible to identify specific ferrous objects from the magnetic field contours, it is occasionally possible to approximate the shape, mass, and alignment characteristics of wrecks or other structures based on complex magnetic field patterns. In addition, other data (historic accounts, use patterns of the area, diver inspection), which overlap data from other remote sensing technologies, such as the side-scan sonar and prior knowledge of similar targets, can lead to accurate identification of potential targets.

There are three types of commercially available marine magnetometers: proton precession, cesium vapor, and Overhauser. Throughout the project, eTrac, Inc., employed a Geometrics 882 cesium vapor magnetometer (Figure 5-3). The magnetometer was towed at 30-m interval spacing and at maximum 6 m above the riverbed to ensure data quality. It must be noted that the magnetometer utilized during this survey had a sensitivity of 0.01 nT, a sampling rate of every 0.1 seconds, and background noise did not exceed 3 nT throughout the duration of the survey. In alignment with Bureau of Ocean Energy Management (BOEM) guidelines, with recommendations for marine magnetic surveys, careful evaluation was given to the choice of equipment, whether it is a marine magnetometer or transverse gradiometer. While a transverse gradiometer is suggested, the decision was made to use a single cesium vapor G-882 magnetometer. This choice was based on several key factors, including the nature of the primary targets—large, well-defined ferrous objects such as shipwrecks and anchors. Given the strong magnetic signatures of these objects, the G-882 magnetometer was determined by Chronicle Heritage SOI qualified maritime archaeologists to be fully capable of effectively detecting them.

The submerged environment further supported this decision to utilize a marine magnetometer, with relatively shallow and variable marine conditions across much of the site. The use of a single magnetometer not only ensured operational safety but also proved advantageous in terms of equipment sensitivity and data clarity. The G-882 magnetometer, with a sensitivity of 0.01 nT and a data sampling rate of 10 hertz, performed exceptionally well, especially in the low noise conditions encountered during the survey. Background noise did not exceed 3 nT, and the instrument was consistently maintained at a height of less than 6 m (20 ft) above the riverbed, in accordance with BOEM's deployment and calibration standards.

The Earth's magnetic activity is measured by the Kp index, which ranges from 0 to 9 with higher numbers indicating greater magnetic disturbance. The Kp index remained below 5 throughout the survey, indicating low geomagnetic disturbance and ensuring the quality of the collected data. Following collection, the data were analyzed and processed by Chronicle Heritage SOI-qualified maritime archaeologists, further validating the use of the single magnetometer for this specific project.

Data were stored in the navigation computer and archived. The Geometrics 882 is capable of subsecond recordation for precise location control, and data were collected at 10 hertz, providing

a record of both the ambient field as well as the character and amplitude of the anomalies encountered.



Figure 5-3. Survey instruments employed during the investigation included the magnetometer (top left), side-scan sonar (bottom left), and the subbottom profiler (right).

Side-Scan Sonar

The remote sensing instrument used to search for physical features on or above the ocean floor was an EdgeTech 4125 side-scan sonar system (Figure 5-3). The side-scan sonar is an instrument that, through the transmission of dual fan-shaped pulses of sound and reception of reflected sound pulses, produces an acoustic image of the bottom. Under ideal circumstances, the side-scan sonar is capable of providing a near-photographic representation of the bottom on either side of the trackline of a survey vessel.

The EdgeTech 4125 has the internal capability for removal of the water column from the instrument's video printout as well as correction for slant range distortion. This side-scan sonar was used with the navigation system to provide manual positioning of fix or target points on the digital printout. Side-scan sonar data are useful in searching for the physical features indicative of submerged cultural resources. Specifically, the record is examined for features showing characteristics such as height above the bottom, linearity, and structural form. Additionally, potential acoustic targets are checked for any locational match with the data derived from the magnetometer and the subbottom profiler.

The 4125 side-scan sonar was linked to a towfish that simultaneously employed both 600- and 1600-kilohertz frequency settings and a variable side range of 40 m per channel (131.2 ft) on each of the survey lines. The 40-m-per-channel setting was chosen to provide detail and, at a minimum, 200 percent overlapping coverage with the 40-m line spacing and ensure full coverage of the survey area. The side-scan sonar was positioned at a height of 10 to 20 percent the instrument range in meters per channel above the riverbed to ensure data quality for the 40-m line spacing. Employing both frequencies ensured that both maximum detail (using the 1600-kilohertz transducers) and greater penetration (via the lower 600-kilohertz transducers) could be acquired for review throughout the area surveyed.

Subbottom Profiler

Employed to determine the character of near-surface geologic features over the survey area, subbottom profilers generate low-frequency (0.5–30 kilohertz) sound pulses capable of penetrating the seabed and reflecting off sediment boundaries or larger objects below the surface. The data are then processed and reproduced as cross-sections based on two-way travel

time (the time taken for the pulse to travel from the source to the reflector and back to the receiver). This travel time is then interpolated to depth in the sediment column by calculating at 1,500 m per second (the average speed of sound in water).

Subbottom profilers have different ranges of sound wave frequency (sparkers, boomers, pingers, chirp, and parametric systems). Sparkers and boomers operate at low frequency (5 hertz to 2 kilohertz) and afford deep geologic penetration and low resolution, which is useful for deeper geologic time. Pingers (3.5 and 7 kilohertz) are more useful for penetrating late Pleistocene- and Holocene-aged deposits or paleolandscape features of interest to precontact archaeologists. CHIRP systems sweep multiple frequency ranges and are the most precise and accurate of the subbottom profiler systems, and they operate at 2–40 kilohertz. The resolution can be on the order of <1 to 10 centimeters (cm) (6 inches [in]) depending on sediment type and the quality of the acoustic return. The parametric systems represent the newest generation. They employ two separate sound pulses, which interact to generate a single, narrow sound beam. Thus, parametric systems suffer less from side lobes and reverberation than their linear contemporaries. eTrac, Inc., employed an Innomar SES-2000 Compact Parametric subbottom profiler system with a topside power unit, laptop processor, and fixed transducer (Figure 5-3). The device was run at 30-m interval spacing and operated at a setting of 4–24 kilohertz for maximum penetration, resolution, and data quality.

Seismic cross-sections reconstruct the shapes and extents of reflectors such as facies in channel sediments, rock-sediment interfaces, marine sand bed cover, and so forth. In addition to subbottom profiling, and depending on the density of data points, the first bottom return data can be used for bathymetry. Shipwrecks can be studied with subbottom profilers once their location is known. Finding shipwrecks with a subbottom profiler survey is often unfruitful.

High- and low-amplitude reflectors distinguish differences in sediment characteristics such as particle size and consolidation (Stevenson et al. 2002). Facies contacts can be identified by discontinuities in the extent, slope angle, or shape of the reflector returns. This latter fact is important when identifying the sinusoidal shapes of drowned channel systems and other relict and buried fluvial system features (e.g., estuarine, tidal, lowland, and upland areas around drainage features). Parabolic-shaped reflectors indicate individual objects of sufficient size and hardness. The parabolic shape is the result of sound propagating outwardly from the item. Five types of signals may cause misinterpretation in the two-dimensional records: direct arrivals from the sound source, water surface reflection, side echoes, reflection multiples, and point source reflections. Judicious analysis is required to identify them.

Peats tend to reflect strongly, as do other fine grain or muddy sediments. Sand and shell deposits are less reflective and difficult to penetrate without lower seismic frequencies such as employed by the profiler system employed here.

Survey Vessels

eTrac, Inc., used two company-owned survey vessels throughout the execution of the submerged remote sensing survey; the R/V *Rapid*, a 28-ft, aluminum monohull powered by twin 250 hp outboard Suzuki engines (Figure 5-4); and the R/V *Taku*, a 33-ft, aluminum catamaran powered by twin 300 hp Suzuki outboard engines (Figure 5-5).



Figure 5-4. eTrac, Inc. survey vessel, R/V Rapid.



Figure 5-5. eTrac, Inc., survey vessel, R/V Taku.

R/V *Rapid* is an aluminum monohull, hydrographic survey vessel which was utilized to collect the multibeam and sub-bottom data. *Rapid* is field proven having conducted numerous hydrographic and geophysical surveys throughout California with towed and mounted sensors. It is easily transported and can be mobilized for survey rapidly. A dual antenna GNSS positioning, and motion measurement system was installed on the vessel with a long antenna baseline allowing maximum heading accuracy. *Rapid* had all offsets on the vessel measured while on a trailer to ensure that measurements to the positioning equipment are accurate to less than 3-cm. The vessel is equipped with two USMs. The multibeam system was mounted on this specially engineered side mount. This mount positions the system with 100% repeatability and allows for surveying in shallow water due to a specifically designed break away block (Appendix B).

R/V *Taku* is a 2006/2007 built Armstrong Marine (currently Brix Marine), aluminum catamaran, hydrographic survey vessel which was utilized to collect the side-scan sonar and magnetometer data. The vessel is equipped with Optimus 360 Joystick controls, dynamic positioning, and an

autopilot system. R/V *Taku* is a proven vessel for high quality data collection and high productivity in inclement weather. This survey vessel has proven its reliability for dozens of assignments throughout the continental US and Alaska (Appendix B).

Both vessels conformed to all U.S. Coast Guard specifications, according to class, and had a full complement of safety equipment. They carried all appropriate emergency supplies including but not limited to lifejackets, tool kit, first-aid supplies, flares, and air horns.

5.1.3 Remote Sensing Survey Procedures

The maritime survey area extended beyond the proposed cable placement to ensure full coverage of any areas with the potential to be affected by Proposed Project activities. Parallel survey lines were spaced at 30-m to 40-m intervals depending upon the capable coverage span of the geophysical instrument. The magnetometer and subbottom profiler were run at 30-m interval spacing (Figure 5-6) while the side-scan sonar was run at 40-m interval spacing with vertical tie lines for data collection spaced at 425-m intervals (Figure 5-7). These planned survey lines were programmed into the navigation computer. The magnetometer, side-scan, and subbottom profiler were deployed for the entirety of the survey. Before initiating the survey, the instruments were mobilized, tested, and found operational. The helmsman viewed the navigational computer to accurately traverse the survey tracklines. The monitor displayed the preplotted trackline, the real-time position of the survey vessel, and the cross-track distance from the preplotted trackline. The speed of the survey vessel was maintained at approximately 4 knots for the uniform acquisition of data. The positioning points along the traveled line were recorded on the computer hard drive, and the magnetic data were also stored digitally.

5.2 Data Analysis Criteria, Theory, and Commentary

The remote sensing survey of the Proposed API/APE intended to locate and identify the presence or absence of potentially significant submerged cultural resources that, if present, might be adversely affected by proposed navigation improvement activities. However, the interpretation of remote sensing data obtained from both the magnetometer and side-scan sonar, as stated by Pearson et al. (1991), "relies on a combination of sound scientific knowledge and practical experience." The evaluation of remote sensing targets, with regard to a determination that the anomaly does or does not represent a significant resource, depends on a variety of factors. These include the detected characteristics of the individual targets (e.g., magnetic anomaly strength) associated with other side-scan or magnetic targets and relationships to observable target sources such as channel buoys or pipeline crossings.

5.2.1 Subbottom Profiler Analysis

Subbottom profilers generate low-frequency acoustic waves that penetrate the seabed and reflect off boundaries or objects located in the subsurface. The data are then processed and reproduced as a cross-section using two-way travel time to determine the depth (the time taken for the pulse to travel from the source to the reflector and back to the receiver by a constant). The shapes and extent of reflectors are used to identify bottom and subbottom profile characteristics.

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Figure 5-6. Magnetometer and Subbottom 30 meter spaced Planned survey lines.

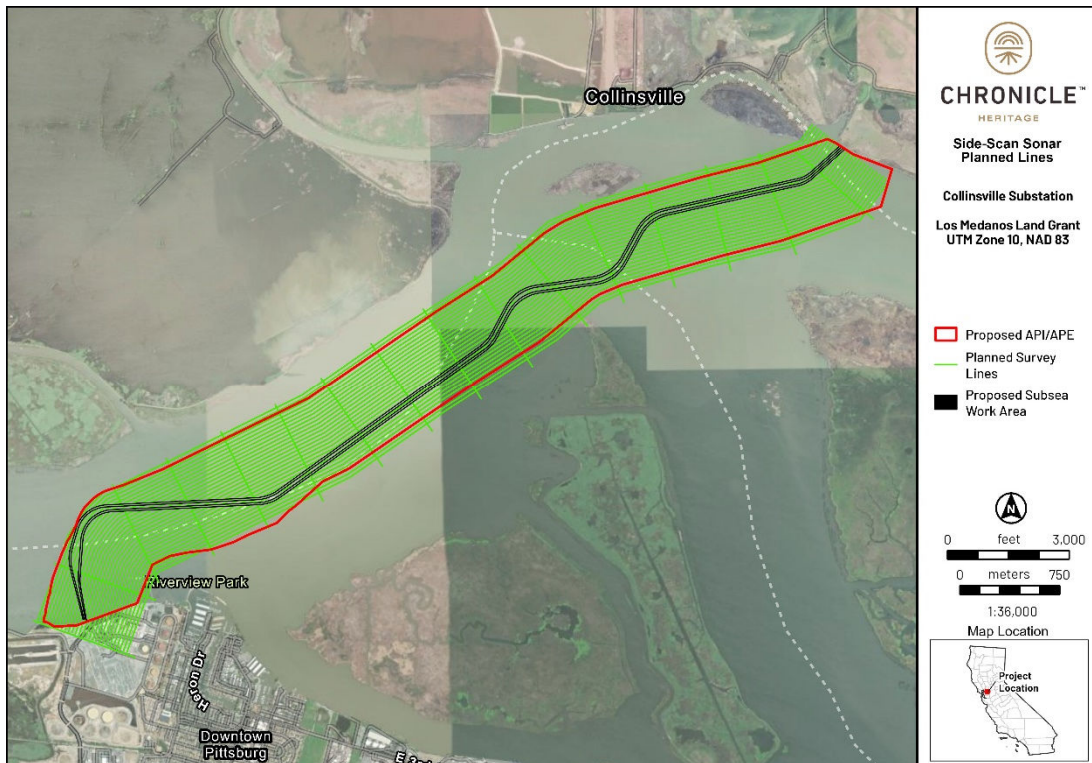


Figure 5-7. Side-scan sonar 40 meter spaced Planned survey lines.

In general, high- and low-amplitude linear reflectors (light and dark lines) distinguish between sediment beds; parabolic reflectors indicate point-source objects with sound propagating out from them, and erosional or nondepositional contacts can be identified by discontinuities in extent, slope angle, and the shape of the reflector morphology. This latter fact is important when identifying drowned channel systems, other relicts, and buried fluvial system features (e.g., estuarine, tidal, lowland, and upland areas around drainage features).

Five types of spurious signals may cause confusion in the two-dimensional records that specialists recognize: direct arrival from the sound source, reflection multiples, water surface reflection, side echoes, and point-source reflections. A judicious analysis is required to identify these acoustic imagery phenomena. In all cases, precise inference of a sediment bed or other anomaly from the subbottom profiler data would necessitate coring.

In analysis, seismic impedance contrast returns indicating positive relief features, such as possible mounds and negative relief features as a probable paleochannel or other fluvial feature with margins and sediment beds, indicate high potential for precontact remains. Other features of interest are buried surface continuations.

Positive relief features on subbottom records are predictable phenomena given that piles of erosion-resistant material of differential character than the surrounding sediments should be perceivable with sound underwater imagery (e.g., subbottom profiler), and therefore, they have long drawn submerged precontact archaeologists as potentially identifiable features to find in places that have otherwise impossibly similar images to search (Stright 1990).

5.3 Method and Theory for Recognition of a Submerged Precontact Site

Chronicle Heritage's methodology for identifying submerged precontact sites entails developing criteria for the discovery of a "site" in any particular setting. The criteria are based on the geology and archaeology of the Proposed API/APE and models of site submergence. Models for the presence and preservation of submerged archaeological sites are discussed by several researchers including Waters (1992) in his chapter on coastal processes, Kraft et al. (1983), and others. Much of this has to do with the identification of landforms identifiable with remote sensing that have the potential for archaeological site presence. For instance, two models used in this project were horizontal surfaces near channel features and positive relief features considered potentially to represent midden features (i.e., shell middens). Causeways, fishing weirs, or other precontact infrastructure features are difficult to identify.

Publications are more limited that are specific to recognizing sedimentary signatures of the deposits that make up sites that have been transgressed by rising sea levels and then remained submerged, perhaps buried, until exposure. One study specifically focused on such information is Gagliano et al.'s (1982) *Sedimentary Studies of Prehistoric Archaeological Sites: Criteria for the Identification of Submerged Archaeological Sites of the Northern Gulf of Mexico Continental Shelf*. This document has high value but limited distribution. Gagliano's group chose 15 terrestrial sites in Louisiana and Texas as analogs from 8 identifiable and mappable landforms commonly and consistently associated with archaeological sites on land, terrestrially. Their local geomorphic features included major natural levee, minor natural levee, Chenier and accretion ridges, barrier island, salt dome margin, estuarine margin, channel on Pleistocene terrace, and lake margins. They sampled sediments with excavations and box core sampling; recorded color, bedding, and contact descriptions; sorted the sediments to particle size; conducted point count and grain size analysis;

and then geochemically analyzed the samples by levels. They showed that sites were recognized most frequently by shell content, fish bones, and charred wood. Some ceramic and lithic artifacts were identified, but they were rare and small.

Another aspect to realize about submerged precontact sites is that virtually all examples of inundated sites are partially, or wholly, reworked in ways somewhat analogous to deflation (Fischer 1995; Masters and Flemming 1983). This is caused by the fluidization of sediments at times of inundation and the removal of fine particles that are often redeposited with material by subsidence of the inundation or wave action. Faught (1996, 2002–2004) has shown sites with late-Pleistocene, early Holocene, and middle-Holocene artifacts to be reworked by sea level rise and submergence, but that artifact arrays remain cohesive as surface and near-surface remains.

Because of these factors, recognition that deposits are cultural is not always immediately apparent to the diver or at first glance of the collected materials. Artifacts are important but not always part of the site as Gagliano et al. (1982) have systematically determined. Expectations for midden deposits include the dominance of unarticulated specimens of mollusk species, faunal bone, and manuports (i.e., geologic items out of place). On the other hand, the discovery of any artifact would be important especially in any sediment bed below a marine bed.

5.3.1 Magnetometer

Interpretation of data collected by the magnetometer, the tool of choice by the underwater archaeologist for locating buried shipwrecks, is perhaps the most problematic. Magnetic anomalies are evaluated and prioritized based on magnetic amplitude or deflection of nanotesla intensity from the ambient background in concert with duration or spatial extent (distance in feet along a trackline of an anomaly influence the ambient background). They are also correlated with side-scan contacts. Because the sonar record gives a visible indication of the target, identification or evaluation of potential significance is based on morphology, especially structural characteristics, as well as association with magnetic anomalies. Targets, such as isolated sections of pipe, can normally be immediately discarded as nonsignificant, while large areas of above-sediment wreckage are generally easy to identify.

The problems of differentiating between modern debris and shipwrecks, based on remote sensing data, have been discussed by several authors. This difficulty is particularly true in the case of magnetic data; therefore, it has received the most attention in the current body of literature dealing with the subject. Pearson and Saltus (1990:32) state, “even though a considerable body of magnetic signature data for shipwrecks is now available, it is impossible to positively associate any specific signature with a shipwreck or any other feature.” There is no doubt that the only positive way to verify a magnetic source object is through physical examination. However, the size and complexity of a magnetic signature do provide a usable key for distinguishing modern debris and shipwreck remains (see also Garrison et al. 1989; Irion and Bond 1984; Pearson et al. 1993). Specifically, the magnetic signatures of most shipwrecks tend to be large in area and tend to display multiple magnetic peaks of differing amplitude.

In a study conducted for BOEM for magnetic anomalies in the northern Gulf of Mexico, Garrison et al. (1989) indicate that a shipwreck signature will cover an area between 10,000 and 50,000 m². Using the Garrison et al. (1989) study, as well as years of “practical experience,” in an effort to assess the potential significance of remote sensing targets, the Pearson et al. (1991) study developed general characteristics of magnetometer signatures most likely to represent shipwrecks. The report states that “the amplitude of magnetic anomalies associated with

shipwrecks varies considerably, but, in general, the signature of large watercraft or portions of watercraft, range from moderate to high intensity (>50 nTs) when the sensor is at distances of 20 feet or so" (Pearson et al. 1991:70). Employing a table of magnetic data from various sources as baseline data, the report goes on to state that "data suggests that at a distance of 20 feet or less, watercraft of moderate size are likely to produce a magnetic anomaly (this would be a complex signature [i.e., a cluster of dipoles and/or monopoles]) greater than 80 or 90 feet across the smallest dimension..." (Pearson et al. 1991:70).

While establishing baseline amounts of amplitude and duration reflective of the magnetic characteristics for a shipwreck site, the report "recognizes that a considerable amount of variability does occur" (Pearson et al. 1991:70). Generated in an effort to test the 50 nT per 80 feet criteria, and to determine the amount of variability, Table 5-1 lists numerous shipwrecks as well as single- and multiple-source objects located by magnetic survey and verified by divers. All shipwrecks met and surpassed the 50 nT per 80 feet criteria with one exception. Emanuel Point II's magnetic deviation falls below the cutoff, although the duration is above. Subsequent archaeological examinations have determined that Emanuel Point II contains very little iron (Greg Cook, personal communication, 2011). The majority of single-object readings fell below the criteria (with the exception of the pipeline, the two sections of pipe, and one of the seven rocket motors). However, the signature of the pipeline should appear as a linear feature on a magnetic contour map and should not be confused with a single-source object. The strengths of the two sections of pipe represent refinement readings that sought to produce the highest reading possible and should perhaps be discounted from the sample. Further, because of their association with the space program, rocket motors, which are single-source objects, must be considered potentially significant. While the shipwrecks and most single-source objects adhere to the 50 nT per 80 feet criteria, the multiple-source objects do not. If all targets listed on the table required prioritization of potential significance based on the 50 nT per 80 feet criteria, the two multiple-source object targets would be classified as potentially significant.

While the 50 nT per 80 feet criteria is a good general guide for most conditions, several recent studies have suggested that a 50 nT per 80 feet duration applied to remote sensing data as a baseline for all wreck sites is much too low. Allowing for a larger and more focused database on which to assess signature characteristics of specific vessel classes, the findings from these investigations argue for higher nanotesla and duration criteria for specific types of sites. Table 5-1 indicates the sizable magnetic deviation and duration of previously recorded and located steamboat wreck sites, the steamboat playing a critical role in the maritime commerce on the Sacramento River and the Proposed Project area (see *Historical Background*). However, there is one exception, each of the known steamboat wrecks investigated has a magnetic deviation of at least 500 nT and a duration of no fewer than 110 ft, usually in the more than 200-foot range. As opposed to single objects, steamboat wrecks documented during previous investigations are generally much larger in magnetic strength (although not always), tend to have a longer duration, and typically have multicomponent signatures. It should be noted, however, that each steamboat wreck signature differs markedly due to environmental conditions, the amount of hull and machinery remaining, and the depth of water and overburden over the wreck site.

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Table 5-1. Compilation of Magnetic Data from Various Sources

| Vessel (Object) | Type and Size | Magnetic Deviation (nT) | Duration (ft) | Reference |
|-----------------------------------|---|--------------------------------|----------------------|--|
| Shipwrecks | | | | |
| <i>J.D. Hinde</i> | 129-foot wooden sternwheeler | 573 | 110 | Gearhart and Hoyt 1990 |
| <i>Mary</i> | 234-foot iron-hulled sidewheeler | 1,180 | 200 | Hoyt 1990 |
| Confederate Obstructions | Numerous vessels with machinery removed and filled with construction rubble | 110 | long duration | Irion and Bond 1984 |
| <i>Utina</i> | 267-foot wooden freighter | 690 | 150 | James and Pearson 1991; Pearson and Simmons 1995 |
| <i>Gen C.B. Comstock</i> | 177-foot wooden hopper dredge | 200 | 200 | James et al. 1991 |
| Egmont Shoal wreck | 19th century Wooden-hulled copper clad sailing vessel | 67 | 160 | Krivor 2005 |
| <i>USS Narcissus</i> | Civil War wooden tug | 582 | 176 | Krivor 2005 |
| <i>El Nuevo Constante</i> | 126-foot wooden collier | 65 | 250 | Pearson et al. 1991 |
| <i>James Stockton</i> | 55-foot wooden schooner | 80 | 130 | Pearson et al. 1991 |
| modern shrimp boat | Segment 27 × 5 ft | 350 | 90 | Pearson et al. 1991 |
| <i>Mary Somers</i> | Iron-hulled sidewheeler | 5,000 | 400 | Pearson et al. 1993 |
| <i>Homer</i> | 148-foot wooden side-wheeler | 810 | 200 | Pearson and Saltus 1990 |
| Shrimp Boat | Modern | 162 | 110 | Watts 2000 |
| Pappy's Lane Shipwreck | 165-foot steel-hulled World War II landing craft | 685 | 350 | James et al. 2016 |
| <i>USS Tecumseh</i> | 223 feet Civil War Cannonicus-class monitor | 11,600 | 850 | James et al. 2019 |
| 8SJ4889 (Possibly Dixie Crystal) | 125 feet late 19th/early 20th-century cargo freighter | 1,960 | 250 | Wilson et al. 2019 |
| P1S.0099 | Possible 55-ft-long wreck | 1,557 | 130 | Wilson and Gates 2021 |
| <i>Ben Franklin (SS Franklin)</i> | 264-foot steel-strapped wooden hull sidewheeler | 4545 | 232 | Derlikowski et al. 2022 |
| <i>Undine</i> | sternwheeler | 193 | 200 | James and Krivor 2000 |
| <i>New Mattie</i> | 130-foot wooden sternwheeler | 1,491 | 200 | Buchner and Krivor 2001 |
| <i>J.D. Hinde</i> | 129-foot sternwheeler | 573 | 110 | Gearhart and Hoyt 1990 |
| <i>Choctaw</i> | 223-ton sternwheel towboat | 797 | 250 | Krivor et al. 2002 |
| <i>Star of the West</i> | 172-ton ocean-going sidewheel | 8,300 | 400 | Krivor et al. 2002 |

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| Vessel (Object) | Type and Size | Magnetic Deviation (nT) | Duration (ft) | Reference |
|-------------------------|------------------------------------|-------------------------|---------------|---------------------|
| <i>John Walsh</i> | 275-foot sidewheeler | 1,602 | 280 | James et al. 2002 |
| <i>Mary Somers</i> | Iron-hulled sidewheeler | 5,000 | 325 | Pearson et al. 1993 |
| Single Objects | | | | |
| Pipeline | 18-in diameter | 1,570 | 200 | Duff 1996 |
| Pipe | 3 in × 10 ft | 55 | 352 | Krivor 2005 |
| Pipe/mast/davit | 18 in × 26 ft | 475 | 104 | Lydecker 2007 |
| Anchor | 6-foot shaft | 30 | 270 | Pearson et al. 1991 |
| Iron anvil | 150 lbs. | 598 | 26 | Pearson et al. 1991 |
| Engine block | modern gasoline | 357 | 60 | Rogers et al. 1990 |
| Steel drum | 55 gallons | 191 | 35 | Rogers et al. 1990 |
| Pipe | 8-foot long × 3 in diameter | 121 | 40 | Rogers et al. 1990 |
| Railroad rail segment | 4-foot section | 216 | 40 | Rogers et al. 1990 |
| 7 Rocket Motors | 8–34 feet long | 61–422 | 75–180 | Watts 2000 |
| Multiple Objects | | | | |
| Cable and chain | 5 ft | 30 | 50 | Pearson et al. 1991 |
| Scattered ferrous metal | 14 × 3 ft | 100 | 110 | Pearson et al. 1991 |
| Anchor/wire rope | 8-foot modern stockless/large coil | 910 | 140 | Rogers et al. 1990 |

Furthermore, it should be inferred that one of the biggest influences on a wreck site’s magnetic signature is directly related to the distance from the magnetometer sensor to the wreck site. As stated in Pearson and Birchette:

For a typical iron object, the intensity of its magnetic signature [i.e., anomaly] is inversely proportional to the cube of the distance. One pound of iron, for example, would produce an anomaly of 100 nanoteslas at a distance of 2 feet. At a distance of 10 feet the same pound of iron would produce an anomaly of only 1 nanotesla. A 1,000-ton ship could produce a 700-nanotesla anomaly at 100 feet and a barely discernible 0.7-nanotesla anomaly at 1,000 feet (Pearson and Birchette 1999:4–13).

An example of a steamboat wreck that produces a magnetic signature of less than 500 nT involves the purported *Undine* site investigated by Panamerican in 1999 and 2000. During 1999, remote sensing operations located a magnetic anomaly with a magnetic deflection of 193 nT with a duration of 300 ft. During the 2000 field investigations, the anomaly was identified as the remnant of a charred steamboat about 38–40 feet below the river’s surface and buried 8 feet below riverbed sediments. Historic records indicate the *Undine* was extensively salvaged after the scuttling incident, whereupon everything of value, including all iron plating, machinery, and cannon, were

removed from the wreck, but the hull remained in place (James and Krivor 2000:16-17). While only a small portion of the wreck site was uncovered (due to the extensive amount of overburden), it was evident that little of the hull is extant, only just to the turn of the bilge.

It should also be stated that two of the wreck sites with either small areas of deviation or low nanotesla deflections, the *J.D. Hinde* and the purported *Undine*, represent either partial hull remains (*J.D. Hinde*) or were heavily burned and salvaged (*Undine*). Historic records indicate that the *J.D. Hinde* was also salvaged after the wrecking process. Retaining none of her steam machinery or wheels, half of the vessel was no longer present, most likely as a result of dredging; both salvage and dredging the obvious reason for its small magnetic duration (James and Pearson 1993:22). Salvage efforts are often sought to remove any cargo as well as any machinery, cannon, anchors, or other goods of value. During the Civil War, the salvage of iron for reuse was often paramount. As stated by John B. Jones on August 11, 1863, "the iron was wanted more than anything else but men" (Black 1958:200). Therefore, it may be speculated that any wreck site that (1) has been salvaged in the past, (2) has been exposed to excessive environmental processes (i.e., current), or (3) has been affected by channelization efforts (i.e., dredging) will produce a lower nanotesla deflection (due to less ferrous metal on site) than a wreck not exposed to similar processes.

If the signatures of the entire steamboat wrecks listed in Table 5-1 are averaged, an average magnetic deviation of 2,627 nT with an average duration of 321 feet is obtained. Although the sensor distance, environmental factors, and the amount of ferrous metal remaining on any given steamboat site must be considered, previously identified wreck sites have tended to produce sizable >200-nT magnetic deviations with a minimum duration of 110 ft. While the 110-foot duration represents the lowest duration of any of the known steamboat wreck sites, it must be stated that in such cases, a portion of the wreck is no longer extant due to previous salvage and dredging or channelization efforts. However, until further surveys show that this short duration is an "anomaly," so to speak, it must be employed as the baseline duration. Similarly, with the exception of the *Undine* site, which, as stated previously, was heavily salvaged, all other surveyed steamboats have nanotesla deviations approaching 500 nT or above, but its 200-nT reading must be employed as the baseline amplitude.

While the data indicates the validity of employing specific nanotesla strength and duration criteria when assessing magnetic anomalies, other factors must be considered. Pearson and Hudson (1990) have argued that the past and recent use of a water body must be an important, and often the most important, consideration in the interpretation of remote sensing data. Unless the remote sensing data, the historical record, or the specific environment (i.e., harbor entrance channel) provides compelling or overriding evidence, it is otherwise believed that the history of use should be a primary consideration in the interpretation. The constitution of "compelling evidence" is, to some extent, left to the discretion of the researcher. However, in settings where modern commercial traffic and historic use have been intensive, the presence of a large quantity of modern debris must be anticipated. In harbor, bay, or riverine settings, where traffic is heavy, this debris will be scattered along the channel right-of-way, although it may be concentrated in areas where traffic would slow or halt, and it will appear on remote sensing survey records as discrete, small objects. These latter statements are certainly applicable to the current survey corridor with its built environment, shipping channels, and extensive maritime traffic.

In addition to anomaly strength and duration considerations, all anomalies were assessed for type (monopole [negative or positive influence], dipole [negative and positive influence], or complex) and association with other magnetic anomalies (i.e., clustering) and side-scan sonar targets.

Concerning the analysis of these anomalies, relative to potential significance, many will be found to represent a small, single-source object (a localized deviation) and are generally identified and labeled as nonsignificant, especially in an area of high use. As seen on contour maps, the contour lines for this type of anomaly can be seen to approach or go to, but not beyond, the adjacent survey trackline on which it is located. This visual interpretation is corroborated during the analysis of the electronic magnetometer strip-chart data of each survey trackline. An examination of the strip chart will show that the target was recorded only on a single transect and that it was not recorded (i.e., did not influence the ambient magnetic background) on adjacent lines. This is an important distinction when an anomaly's readings are large deviations but are recorded on only one line. This indicates the source for this target must be a small, discrete object, and the magnetometer sensor must have passed close by or directly over the object to generate the large readings on this survey line yet not be recorded or have had an influence on adjacent lines. Because these anomalies represent single-source objects, they are not considered representative of a potentially significant submerged cultural resource.

False positives can also be recorded as a result of geomagnetic storm activity (Carrier et al. 2016). These solar-originating magnetic field disturbances can confound magnetic records, generating deceptive signatures. Although more applicable to areas generally void of anomalous sources such as the Outer Continental Shelf (OCS), as opposed to heavily built and trafficked environments with hundreds of anomalous sources such as the current survey area, there are several ways to mitigate these disturbances. One possibility is through the use of a transverse gradiometer such as mandated by the BOEM for cultural resources surveys on the OCS. As gradiometers measure the change in the magnetic field between two nearby sensors, the wide-reaching disturbances are recorded equally between the sensors, nullifying the deviation. Another method used primarily by Chronicle Heritage is through the comparison of project magnetic strips to the nearest magnetic observatory (such as those listed on <http://www.intermagnet.org/>). However, as Carrier et al. (2016) observed, geomagnetic storms during periods of Kp-index of 5 or higher diminish the ability of the researcher to identify storm sudden onset signatures within a dataset. For this reason, NOAA's Geomagnetic Forecast (found at <https://www.swpc.noaa.gov/products/3-day-geomagnetic-forecast>) is consulted to ensure that data is not collected on days of Kp-index 5 or higher. The NOAA recorded Kp-index during the Collinsville magnetometer survey was well under 5 with just three hours on October 21 just approaching 5. The following is the Kp-index for each day: Oct. 19 <4, Oct. 20 <3, Oct. 21 <5 (just at 5 for 3 hours), Oct 22 <3, Oct. 23 <1, Oct. 24 <1, Oct. 25 <2, Oct. 26 <5 (<https://www.spaceweatherlive.com/en/archive/2023/10/26/kp.html>).

The majority of anomalies recorded during any survey are generated by debris and not shipwrecks. As stated by Gearhart (2011:91–92), “archaeologists have repeatedly struggled to characterize reliable differences between magnetic signatures of shipwrecks and debris,” employing amplitude, duration (i.e., spatial extent), and complexity of the signature as vague defining criteria, along with judgmental experience, and further states that “present methods for marine magnetic data interpretation are uncertain at best and scientifically unfounded at worst.” In Garrison et al.'s (1989) study to establish an interpretive framework that would help identify the nature of magnetic anomalies, it was predicted correctly that anomalies caused by debris might be differentiated from shipwreck anomalies based on the contrast between permanent and induced magnetism. The study states:

While it may not be analytically possible to contrast iron and steel by remnant magnetization one may be able to characterize anomalies as to their inductive magnetization... The argument here would rely on the structural complexity of a

shipwreck having a large or detectable inductive magnetization. Anomalies without this component could be classified as exclusively ferromagnetic features and by local extension debris (Garrison et al. 1989:2:224).

In his article entitled *Archaeological Interpretation of Marine Magnetic Data*, Gearhart (2011) expands on Garrison et al.'s 1989 premise and convincingly shows that while "one cannot distinguish between the anomaly produced by a shipwreck, and one produced by a similarly complex concentration of magnetic debris...shipwreck anomalies can be characterized by their induced magnetic fields and are distinguishable from a significant proportion of simple-source anomalies." He goes on to state, "the most important parameter to consider when interpreting anomalies based on magnetic induction is the direction of magnetic moment" (Gearhart 2011:106) and "deviation from the northerly magnetic moment direction, common to all induced anomalies, has proven to be the single most powerful discriminator between simple-source anomalies and complex-source anomalies, including shipwrecks" (Gearhart 2011:102).

In simplistic terms, the contour map of the magnetic moment of an induced anomaly will have its negative value to the north and its positive value to the south. Gearhart presents contours of numerous known wreck and debris anomalies and illustrates that magnetic moments of shipwrecks (in the earth's northern hemisphere) are oriented to the north (no more than a 26-degree deviation), as are those of complex debris sites (i.e., large areas of wire rope), while those of simple-source debris anomalies are not. He concludes by suggesting ± 20 degrees from magnetic north as an orientation that will allow the successful differentiation of simple-source debris anomalies from most complex-source anomalies and virtually all shipwrecks (Gearhart 2011). Several examples from recent Chronicle Heritage projects demonstrate the validity of this model (Figure 5-8). While not an exhaustive review, we found these same principles apply with no deviation from Gearhart's findings and leads us to also conclude that identifying and categorizing the magnetic moment of an induced anomaly does allow the researcher the ability to differentiate a large percentage of debris source anomalies from potentially significant resources during analysis. A case in point is the recent diver investigation of 13 magnetic anomalies in the Skyway Gulf Intracoastal Waterway (James et al. 2011). Employing the above criteria of declination of the magnetic moment of the 13 magnetic anomalies investigated, 7 anomalies had magnetic moments that did not meet the characteristics of complex-source anomalies, including shipwrecks, but rather had signatures representative of simple-source debris. Subsequent diver investigation clearly showed that these anomalies did indeed represent nonsignificant debris. Representing over half of the total anomalies, if the orientation of the magnetic moment had been a criterion, they would not have been recommended for subsequent investigation. The remaining six anomalies that had magnetic moment characteristics indicative of shipwrecks or complex debris sites were also found to represent debris (James et al. 2011). This, however, is not unexpected given that this method does not rule out complex-source debris anomalies or all simple-source debris anomalies, just a much larger percentage than would have been ruled out if the method had not been employed. The declination of magnetic moment characteristics as an indicator of potential significance will, we believe, be proven and accepted. The end result could well be the reduction of a significant number of anomalies currently recommended for subsequent investigation.

Such theoretical considerations as those mentioned above, are widely employed by both academic oriented and commercial maritime archaeologists. Maritime archaeologists base their interpretation on the model of magnetic induction which aligns with efficiently illustrating marine magnetic data resulting from archaeological surveys (Gearhart 2011:105). Using the above

theoretical considerations, specifically the Gearhart model, data produced from the geophysical survey was analyzed. Magnetic anomalies that exhibited known shipwreck characteristics such as having multicomponent signatures or maintaining an induced magnetic field were considered potentially significant and are discussed further in *Investigative Findings*. As many single or simple source anomalies are distinguishable from anomalies produced by shipwrecks, many magnetic anomalies were considered non-significant and did not warrant further investigation.

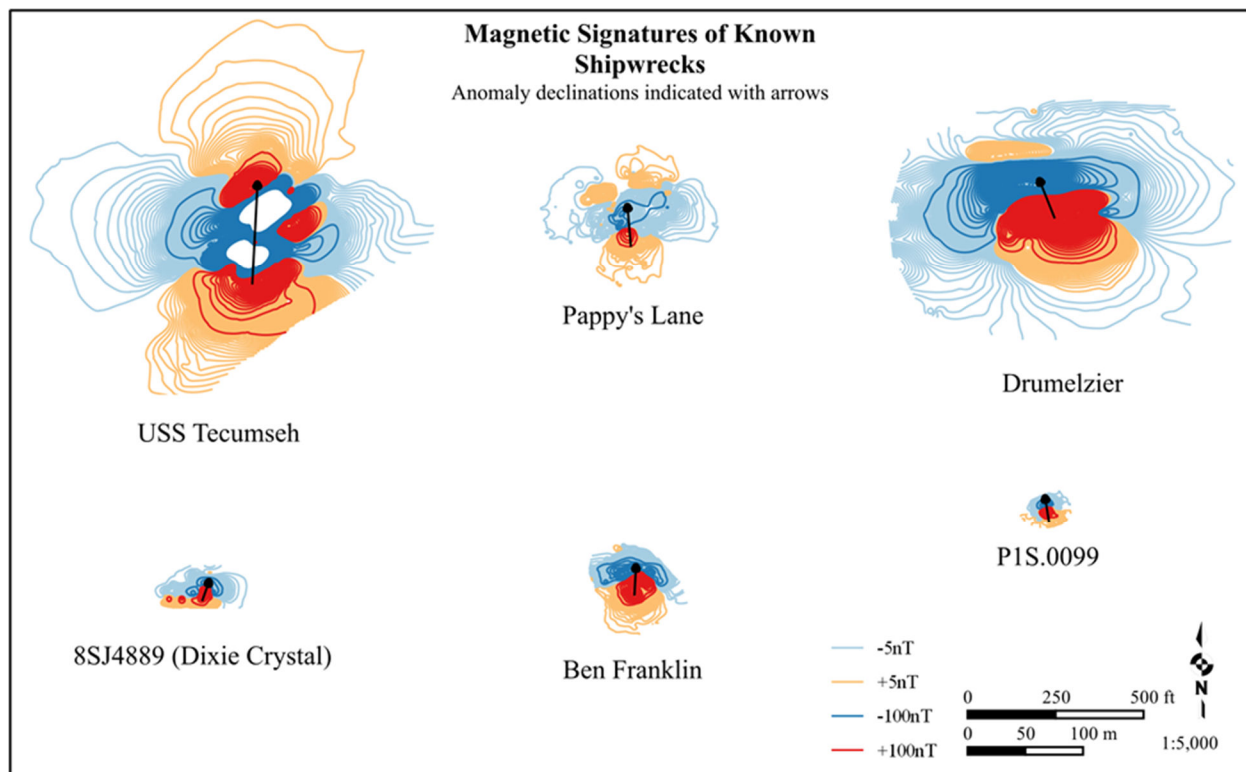


Figure 5-8. Magnetic contour maps of six wreck sites documented during recent Chronicle Heritage Projects. Black arrows indicate the declination of the magnetic anomaly's field. Note that the declination of all fields tends to orient within 20 degrees of magnetic north. See Tables 3-1 and 3-2 for additional information regarding these shipwrecks.

5.3.2 Side-Scan Sonar

In contrast to magnetic data, side-scan interpretation is less problematic, as objects are reconstructed as they look to the eye. Side-scan sonar contacts, such as tree falls, logs, or tires can be immediately discarded as nonsignificant, while large areas of above-sediment wreckage, as well as some exposed potential paleofeatures (i.e., rock outcrops), are generally apparent. The chief factors considered in analyzing side-scan data, with regard to the wreckage, include linearity, height off bottom, size, associated magnetics, and environmental context. Since historic resources in the form of shipwrecks usually contain large amounts of ferrous compounds, complex side-scan targets with complex magnetic anomalies are of the greatest importance. The usual outcome of targets with no associated magnetics are items such as rocks, trees, and other nonhistoric debris of limited interest to the archaeologist.

5.4 Data Analysis

5.4.1 Data Processing

Once collected, survey data were processed and analyzed using an array of software packages designed to display, edit, manipulate, map, and compare proximities of the raster, vector, and tabular data. These packages include SonarWiz 7 for mosaicking side-scan sonar and subbottom profiler data, mapping target extents and generating target reports, figure details, and Geographic Information System (GIS) layers; Hypack Magnetometer Editor, MagPick, and Hypack Export were used for tabulating anomaly characteristics and contouring magnetic data and generating GIS data layers. ESRI ArcGIS was used to display the data on basemaps to conduct a “proximity analysis” for each of the three types of targets (e.g., see which magnetometer, side-scan, and subbottom profiler anomalies are near each other and may be associated) and to generate figures for this report.

5.4.2 Magnetic Data Collection and Processing

Data from the magnetometer were collected using Qinsy. The data were stored as *.CSV files by time and day. Contour maps were produced of the magnetic data with MagPick using a Minimum Curvature gridding algorithm (Figure 5-9). The contour vector file is saved and exported into the combined GIS database. The contour maps allow a graphic illustration of anomaly locations, spatial extent, and association with other targets. Magnetic data are reviewed, and the location, strength, duration, altitude of the sensor, and type of anomaly are captured and exported to a data table, which is then converted to a GIS feature class. For potentially significant anomalies, the depth of burial is estimated using the half-width rule (Breiner 1999:31).

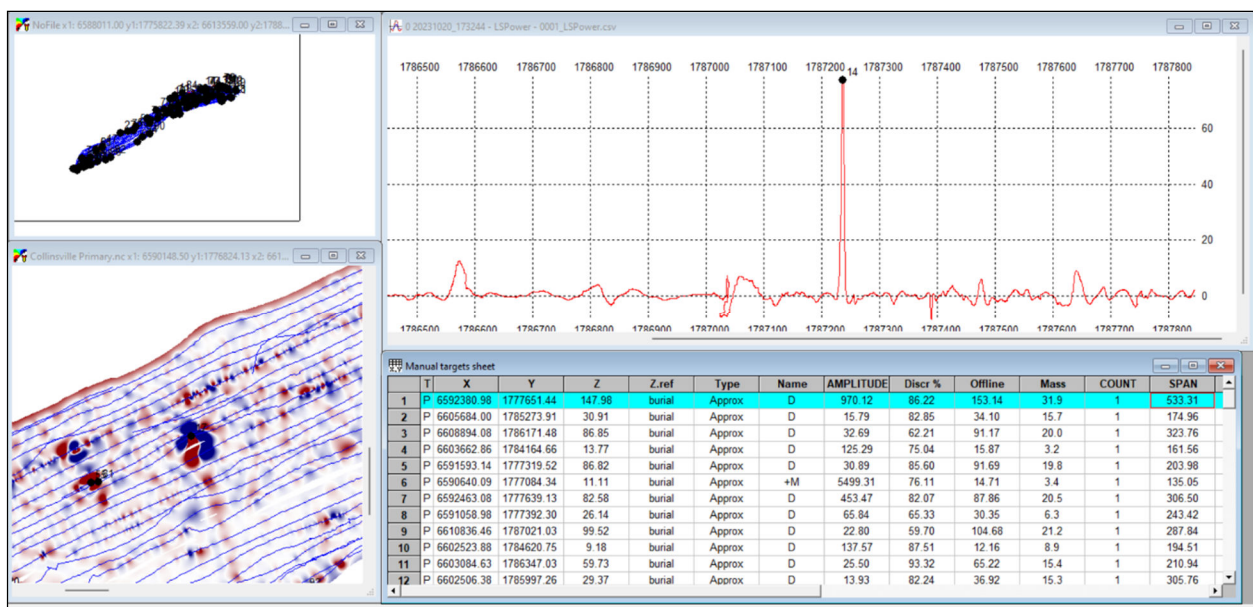


Figure 5-9. MagPick gridding algorithm (pictured bottom left) magnetic data display of a survey line and anomaly locations (pictured top left), example of a magnetic profile (pictured top right), and anomaly data table (pictured bottom right).

5.4.3 Side-scan Sonar Data Collection and Processing

Post-processing of side-scan sonar is accomplished using SonarWiz 7, a product that enables the user to view the side-scan data in digitizer waterfall format, pick targets, and enter target parameters including length, width, height, material, and other characterizations into a database of contacts. In addition, SonarWiz 7 “mosaics” the side-scan data by associating each pixel (equivalent to about 10 cm) of the side-scan image with its geographic location determined from the real-time Hypack corrected position. SonarWiz 7 is the industry standard for mosaicking capability, and the results are exported as geo-referenced *.TIFFs for importing to the project GIS (Figure 5-10 and Figure 5-11). SonarWiz 7 can generate target reports in *.PDF, Word, or Excel format. Chronicle Heritage uses the Word format for reports.

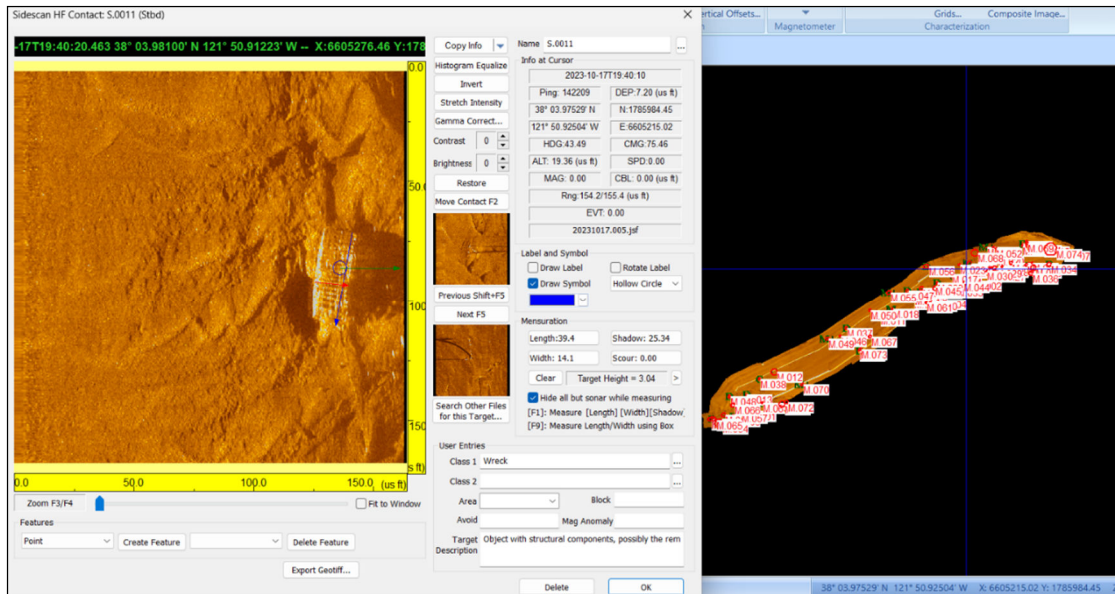


Figure 5-10. SonarWiz 7 software with mosaic example in the background, and a target selection zoom image to the left. Magnetic anomaly locations are overlaid.

| | | |
|--|---|---|
| | <p>S.0011</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/17/2023 7:40:20 PM ● Click Position 38.0663500126 -121.8485372520 (WGS84) (X) 6605276.46 (Y) 1786019.21 (Projected) ● Map Projection: EPSG:6418 ● Acoustic Source File: 20231017.005.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 14.15 US ft ● Target Height: 3.04 US ft ● Target Length: 39.36 US ft ● Target Shadow: 25.34 US ft ● Mag Anomaly: ● Classification1: Wreck ● Description: Object with structural components, possibly the remains of a barge |
|--|---|---|

Figure 5-11. SonarWiz 7 sonar contact tabular format, automatically generated.

5.4.4 Subbottom Profiler Data Processing and Analysis

Postprocessing of subbottom profiler data, like the side-scan data, is done with SonarWiz 7, which, in this case, enables the user to view the subbottom data in a planar, trackline format. The user may view the data in a digitizer window as a waterfall format, allowing the digitizing of subbottom features of interest, linear extent, depth, and type (Figure 5-12). SonarWiz 7 batch processes waterfall images to *.JPG format for figure generation. Digitized reflectors and the contact databases are exported to the GIS as *.SHP files. SonarWiz 7 also allows the user to calculate the amount of sonar coverage and illuminate gaps to ensure full coverage of the Proposed API/APE.

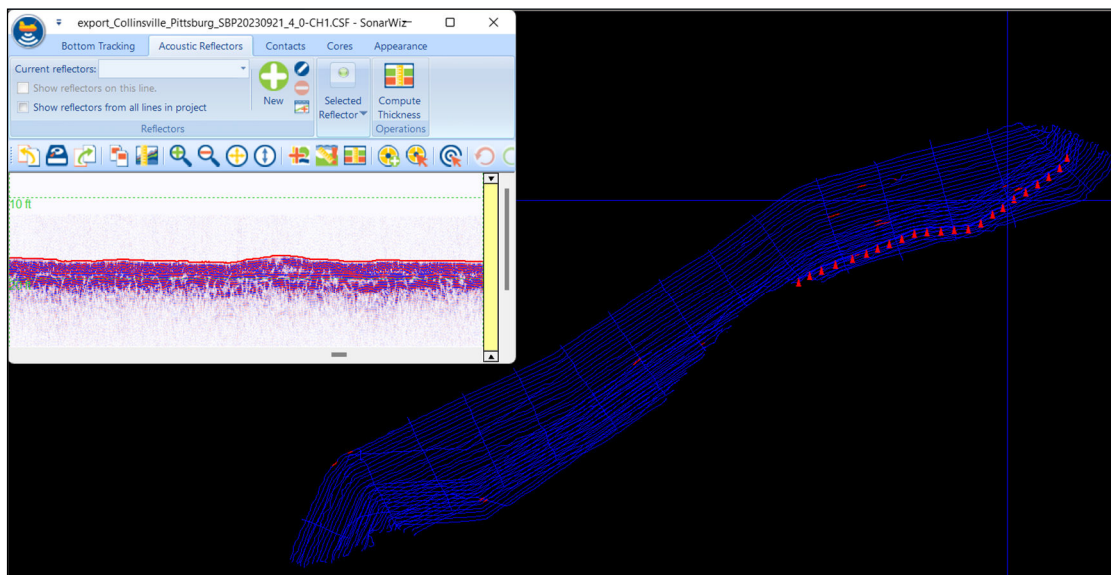


Figure 5-12. SonarWiz 7 subbottom waterfall image showing the seismic profile-digitizing window. The blue crosshairs in the background chart show the location of the cursor, which at the time of the image was directly over the peak of the positive relief feature shown. This image is from a past survey conducted in Tampa Bay (see Faught and James 2009).

5.4.5 Geographic Information System Analysis

A project GIS database is constructed using geo-referenced images and layers generated during the magnetometer, side-scan, and subbottom data analyses. Other layers can be added such as orthographic aerial imagery or navigation charts (Figure 5-13). Several important things are accomplished by GIS compilation. First, the collected data are compared with one another and evaluated for accuracy and consistency of the positioning information. Second, magnetic, side-scan, and subbottom targets are compared for spatial relationships (proximity analysis).

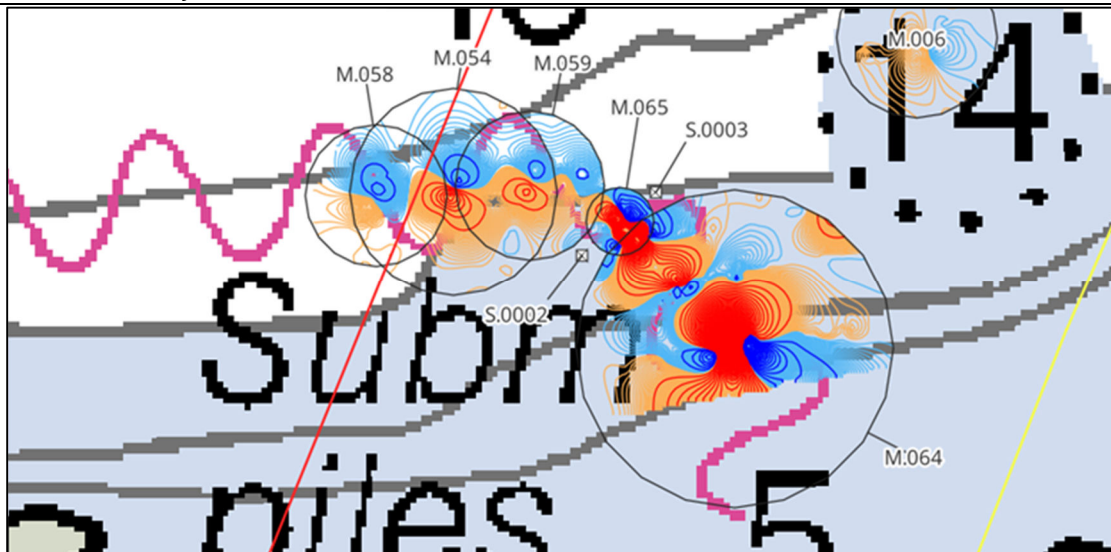


Figure 5-13. GIS database example showing magnetic anomalies, side-scan sonar contacts, magnetic contours, tracklines, and raster chart data showing environmental context (data taken from a previous investigation).

5.5 Investigative Findings

The maritime remote sensing survey of the Proposed API/APE was conducted from September 18 through October 25, 2023. Analysis of the remote sensing data identified 74 magnetic anomalies, 15 side-scan sonar contacts, and 21 subbottom profile reflectors associated with 12 geomorphological features in the form of disparate relict channel landforms. Eleven of these subbottom profiler features were not indicative of intact relict landforms that contained the potential to possess cultural material. One paleolandform, however, was initially thought to cross 7 survey transects within the Proposed API/APE. Upon further analysis, it would seem this feature is indicative of a braided network of dynamic river channels. As such, there is a low probability for the potential for intact cultural material deposits. Still, the landform area is currently being evaluated through coring and soil analysis to determine the possibility for site potential and, if necessary, mitigation.

A total of three ($n = 3$) targets were determined to be potentially significant. Each of the potentially significant targets were comprised of a magnetic anomaly and a side-scan sonar contact. These targets are all recommended for avoidance by Proposed Project activities and are discussed further in Section 6.4.

5.6 Magnetometer Results

Employing the previous discussions on target analysis, magnetic anomalies were assessed for potential significance based on magnetic deviation (above and/or below ambient background), duration (distance in feet along a trackline), type (monopole, dipole, or complex), declination (orientation of the field relative to magnetic north), and association with other magnetic anomalies (i.e., clustering) and side-scan sonar contacts. Analysis of the magnetometer data identified 74 magnetic anomalies with an intensity greater than 5 nT (Table 5-2). Of these anomalies, 15 were

associated with side-scan sonar contacts, allowing for the identification of the anomalies source. Of the magnetic anomalies associated with sonar contacts, five ($n = 5$) were identified as cables, five ($n = 5$) were identified as channel markers, two ($n = 2$) were identified as debris, one ($n = 1$) was identified as the remains of a barge, and two ($n = 2$) were identified as unknown structural objects. One of the unknown structural objects was located near infrastructure, and the other adjacent to a channel marker, which could have been responsible for the associated magnetic anomalies. Of the remaining 59 magnetic anomalies that were not associated with acoustic contacts, one ($n = 1$) was identified as infrastructure, four ($n = 4$) were found to be associated with a charted cable, two ($n = 2$) were determined to originate from unknown buried features located outside of the Proposed API/APE, and one ($n = 1$) was identified at the location of a previously charted obstruction; however, no evidence of the obstruction was identified on the acoustic record. The remaining 51 anomalies were classified as single-point sources (SPSs). Magnetic contour maps are displayed in Figure 5-14 through Figure 5-18.

Regarding the analysis of potential significance of the anomalies identified in this investigation, many were found to represent nonsignificant modern debris, meaning the anomaly occurred on a single survey line and did not meet the criteria established in the previous chapter for the existence of potentially significant resources. However, three ($n = 3$) of the magnetic anomalies were considered potentially significant, each of which was associated with a side-scan sonar contact. M.057 was associated with contact S.0005; however, it cannot be determined if the sonar contact is the source of the anomaly or if the nearby infrastructure is the only generator of the magnetic signature. Similarly, M. 035 is associated with contact S.0015; however, due to the adjacent channel marker, it cannot be determined if the contact contains a magnetic signature. The final potentially significant anomaly, M.074, was found to be associated with the remains of a barge. The low intensity of the anomaly suggests that the barge was of wooden construction, lending to its potentially historic nature. Magnetic anomalies M.057, M.035, and M.074 are considered potentially significant. These anomalies are discussed in further detail in Section 6.4. The data class column in Table 5-2 indicates the data type used to assess each magnetic anomaly.

Submerged Cultural Resources Assessment Survey for the Collinsville 500/230 kV Substation Project, Solano, Sacramento, and Contra Costa Counties, California

Table 5-2. Magnetic Anomaly Data

| Name | X ¹ REMOVED | Y ¹ REMOVED | Duration (ft) | Intensity (nT) | Type ² | Assoc. | Notes | Data Class | Potentially Significant |
|-------|---------------------------|---------------------------|------------------|-------------------|-------------------|--------|----------------|------------|----------------------------|
| M.001 | | | 533.31 | 970.12 | C | - | Infrastructure | Nav Chart | - |
| M.002 | | | 174.96 | 15.79 | D | - | SPS | Mag | - |
| M.003 | | | 323.76 | 32.69 | D | - | SPS | Mag | - |
| M.004 | | | 161.56 | 125.29 | D | - | SPS | Mag | - |
| M.005 | | | 203.98 | 30.89 | D | S.0008 | Cable | Chart | - |
| M.006 | | | 243.42 | 65.84 | D | - | Buried feature | Mag | - |
| M.007 | | | 287.84 | 22.8 | D | - | SPS | Mag | - |
| M.008 | | | 194.51 | 137.57 | D | - | SPS | Mag | - |
| M.009 | | | 54.37 | 78.73 | M+ | - | SPS | Mag | - |
| M.010 | | | 43.45 | 49.19 | D | - | SPS | Mag | - |
| M.011 | | | 588.76 | 3498.87 | C | S.0010 | Channel marker | Nav Chart | - |
| M.012 | | | 363.1 | 1046.52 | C | S.0006 | Cable | Nav Chart | - |
| M.013 | | | 21.58 | 107.69 | D | - | SPS | Mag | - |
| M.014 | | | 269 | 4428.53 | C | S.0012 | Channel marker | Nav Chart | - |
| M.015 | | | 206.22 | 87.93 | M- | - | SPS | Mag | - |
| M.016 | | | 257.18 | 19.84 | D | - | SPS | Mag | - |
| M.017 | | | 49.86 | 31.82 | D | - | SPS | Mag | - |
| M.018 | | | 139.22 | 85.2 | M- | - | SPS | Mag | - |
| M.019 | | | 284.7 | 25.66 | M- | - | SPS | Mag | - |
| M.020 | | | 141.08 | 13.6 | D | - | SPS | Mag | - |
| M.021 | | | 292.92 | 19.25 | D | - | SPS | Mag | - |

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| Name | X¹ REMOVED | Y¹ REMOVED | Duration (ft) | Intensity (nT) | Type² | Assoc. | Notes | Data Class | Potentially Significant |
|-------------|----------------------------------|----------------------------------|--------------------------|---------------------------|-------------------------|---------------|---------------------------------------|-------------------------|------------------------------------|
| M.022 | | | 82.59 | 81.35 | D | - | SPS | Mag | - |
| M.023 | | | 105.33 | 11.92 | M+ | - | SPS | Mag | - |
| M.024 | | | 393.28 | 19.13 | D | - | SPS | Mag | - |
| M.025 | | | 160.47 | 9.55 | D | - | SPS | Mag | - |
| M.026 | | | 129.95 | 8.85 | M+ | - | SPS | Mag | - |
| M.027 | | | 392.68 | 6610.55 | D | S.0014 | Channel marker | Nav Chart | - |
| M.028 | | | 97.95 | 53.74 | D | - | SPS | Mag | - |
| M.029 | | | 227.3 | 78.87 | D | S.0014 | Channel marker | Nav Chart | - |
| M.030 | | | 76.18 | 146.9 | M- | - | SPS | Mag | - |
| M.031 | | | 155.54 | 37.22 | D | - | SPS | Mag | - |
| M.032 | | | 104.3 | 69.64 | D | - | SPS | Mag | - |
| M.033 | | | 332.91 | 37.37 | M+ | - | SPS | Mag | - |
| M.034 | | | 253.63 | 27.91 | D | - | SPS | Mag | - |
| M.035 | | | 276.19 | 817.81 | C | S.0015 | Structural contact and channel marker | Side-scan and Nav Chart | Y |
| M.036 | | | 249.19 | 393.45 | D | S.0016 | Channel marker | Nav Chart | - |
| M.037 | | | 141.18 | 214.1 | D | - | SPS | Mag | - |
| M.038 | | | 111.11 | 2403.97 | C | - | SPS | Mag | - |
| M.039 | | | 90.02 | 10.77 | D | S.0013 | Debris | Side-scan | - |
| M.040 | | | 254.42 | 6.51 | D | - | SPS | Mag | - |
| M.041 | | | 251.37 | 73.04 | M+ | - | SPS | Mag | - |
| M.042 | | | 230.24 | 16.91 | M- | - | SPS | Mag | - |
| M.043 | | | 254.51 | 52.08 | M- | - | SPS | Mag | - |

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| Name | X ¹ REMOVED | Y ¹ REMOVED | Duration (ft) | Intensity (nT) | Type ² | Assoc. | Notes | Data Class | Potentially Significant |
|-------|---------------------------|---------------------------|------------------|-------------------|-------------------|--------|---------------------------------------|-------------------------------|----------------------------|
| M.044 | | | 78.42 | 20.51 | D | - | SPS | Mag | - |
| M.045 | | | 85.63 | 230.1 | D | - | SPS | Mag | - |
| M.046 | | | 102.7 | 40.7 | D | - | SPS | Mag | - |
| M.047 | | | 159.39 | 11.55 | D | - | SPS | Mag | - |
| M.048 | | | 162.12 | 25.42 | D | - | SPS | Mag | - |
| M.049 | | | 161.88 | 34.66 | M+ | - | SPS | Mag | - |
| M.050 | | | 147.05 | 27.62 | D | - | SPS | Mag | - |
| M.051 | | | 112.18 | 152.46 | M+ | - | SPS | Mag | - |
| M.052 | | | 80.89 | 15.14 | D | - | SPS | Mag | - |
| M.053 | | | 84.68 | 14.57 | M- | - | SPS | Mag | - |
| M.054 | | | 314.49 | 1073.36 | D | - | Charted cable | Nav Chart | - |
| M.055 | | | 233.26 | 18.03 | M+ | - | SPS | Mag | - |
| M.056 | | | 297.2 | 16.63 | D | - | SPS | Mag | - |
| M.057 | | | 311.83 | 198.2 | C | S.0005 | Structural contact and infrastructure | Side-scan sonar and Nav Chart | Y |
| M.058 | | | 214.88 | 346.82 | D | - | Charted cable | Nav Chart | - |
| M.059 | | | 226.1 | 496.7 | D | - | Charted cable | Nav Chart | - |
| M.060 | | | 79.18 | 19.66 | M- | - | SPS | Mag | - |
| M.061 | | | 124.93 | 41.64 | D | - | SPS | Mag | - |
| M.062 | | | 99.36 | 73.95 | D | S.0009 | Cable | Nav Chart | - |
| M.063 | | | 105.83 | 14.64 | D | - | SPS | Mag | - |
| M.064 | | | 481.21 | 18359.92 | C | - | Charted cable | Nav Chart | - |

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| Name | X ¹ REMOVED | Y ¹ REMOVED | Duration (ft) | Intensity (nT) | Type ² | Assoc. | Notes | Data Class | Potentially Significant |
|-------|---------------------------|---------------------------|------------------|-------------------|-------------------|-------------------|------------------------|------------|----------------------------|
| M.065 | | | 102.6 | 3701.29 | C | S.0002, S.0003 | Charted cable | Nav Chart | - |
| M.066 | | | 222.87 | 113.27 | M+ | - | SPS | Mag | - |
| M.067 | | | 173.05 | 20.44 | D | - | SPS | Mag | - |
| M.068 | | | 401.88 | 29.64 | D | S.0001 | Debris | Side-scan | - |
| M.069 | | | 150.21 | 82.09 | D | - | SPS | Mag | - |
| M.070 | | | 137.96 | 8.66 | M+ | - | SPS | Mag | - |
| M.071 | | | 336.09 | 351.71 | C | - | Unknown buried feature | Mag | - |
| M.072 | | | 204.22 | 2283.73 | C | - | Unknown buried feature | Mag | - |
| M.073 | | | 159.23 | 23.58 | D | S.0009 | Cable | Nav Chart | - |
| M.074 | | | 207.3 | 15.45 | D | S.011 | Barge | Side-scan | Y |

1 Coordinates in NAD83 California Zone 3, U.S. feet.

2 Type: M-, negative monopole; M+, positive monopole; D, dipole; C, multicomponent.

3 Mag: Magnetometer

4 Nav Chart: Navigation Chart

Submerged Cultural Resources Assessment Survey for the Collinsville 500/230 kV Substation Project, Solano, Sacramento, and Contra Costa Counties, California

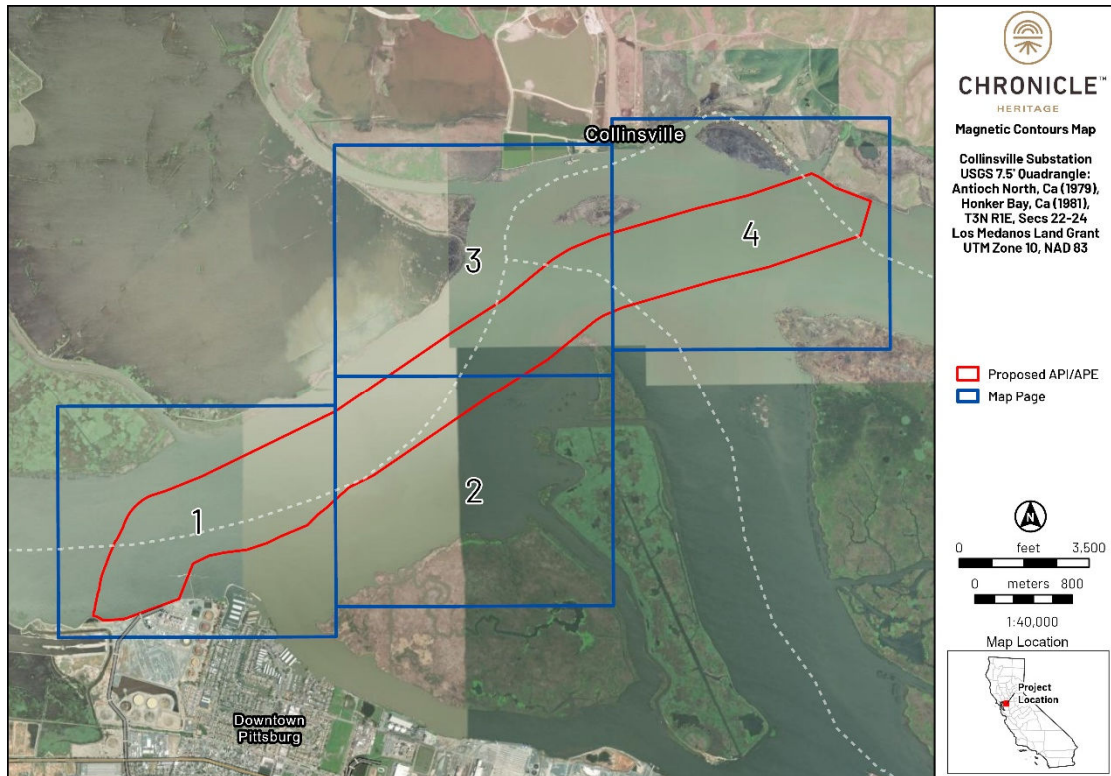


Figure 5-14. Magnetic contours map key.

FIGURE REMOVED

Figure 5-15. Magnetic contours map (1 of 4).

FIGURE REMOVED

Figure 5-16. Magnetic contours map (2 of 4).

FIGURE REMOVED

Figure 5-17. Magnetic contours map (3 of 4).

FIGURE REMOVED

Figure 5-18. Magnetic contours map (4 of 4).

5.7 Side-scan Sonar Results

Side-scan sonar contacts, as visual images, were assessed for structure, linearity, height off bottom, size, associated magnetics, and environmental context. The side-scan sonar data revealed 15 contacts within the Proposed API/APE (Table 5-3 and Table 5-4), of which, 14 were associated with magnetic anomalies. Analysis of the contacts associated with anomalies classified five ($n = 5$) as cable, four ($n = 4$) as channel markers, one ($n = 1$) as debris, one ($n = 1$) as the remains of a wooden barge, and two ($n = 2$) as structural. It must be noted that the two contacts classified as structural were located within the radius of magnetic anomalies that were associated with infrastructure and a channel marker; therefore, it cannot be determined if the contact contains a magnetic source that was washed out by the nearby structures or if the contacts do not contain and magnetics. The remaining contact without a magnetic association was classified as debris. The fact that the barge did not contain a magnetic signature indicates the vessel was constructed of wood. A side-scan sonar mosaic illustrating the survey coverage is presented in Figure 5-19 and contacts are displayed in the magnetic contour maps (see Figure 5-14 through Figure 5-18).

Regarding the analysis of the potential significance of the contacts identified in this investigation, three ($n = 3$) were determined to potentially represent cultural material, each of which was associated with a magnetic anomaly. S.0005 and S.0015 contained structural components, and S.0011 was identified as the remains of a barge. These contacts are considered potentially significant. These contacts are discussed in further detail in Section 6.4. The data class column in Table 5-3 indicates the data type used to assess each magnetic anomaly.

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Table 5-3. Side-Scan Sonar Contact Data

| Contact | X ¹ REMOVED | Y ¹ REMOVED | Class | Height (m) | Length (m) | Width (m) | Shadow (m) | Description | Data Class | Assoc. | Potentially Significant |
|---------|---------------------------|---------------------------|----------------|---------------|---------------|--------------|---------------|---|----------------------|----------------|-------------------------|
| S.0001 | | | Debris | 1.3 | 35 | 11.4 | 6.6 | Debris scatter of an unknown origin, likely modern | Side-scan | M.068 | - |
| S.0002 | | | Cable | 2 | 15.6 | 1.7 | 11.8 | Linear object associated with high intensity magnetic anomaly, likely cable | Side-scan, mag | M.065 | - |
| S.0003 | | | Cable | 3.6 | 26.8 | 2 | 27 | Linear object associated with high intensity magnetic anomaly, likely cable | Side-scan, mag | M.065 | - |
| S.0005 | | | Structural | 1.3 | 55 | 25.5 | 4 | Unknown object with structural components | Side-scan | M.057 | Y |
| S.0006 | | | Cable | 2 | 42.6 | 1 | 17.3 | Linear object associated with high intensity magnetic anomaly, likely cable | Side-scan, mag | M.012 | - |
| S.0007 | | | Debris | 0.5 | 23.9 | 15.4 | 2.5 | Series of objects protruding from sea floor, possibly debris | Side-scan | - | - |
| S.0008 | | | Cable | 0.6 | 14.9 | 0.6 | 8 | Linear object associated with magnetic anomaly, likely cable | Side-scan, mag | M.005 | - |
| S.0009 | | | Cable | 2.9 | 36.6 | 2.8 | 8.3 | Linear object associated with magnetic anomalies, likely cable | Side-scan, mag | M.062 M.073 | - |
| S.0010 | | | Channel marker | 12.1 | 25.8 | 24 | 81.7 | Pilings associated with a channel marker | Nav chart, side-scan | M.011 | - |
| S.0011 | | | Wreck | 3 | 39.4 | 14.2 | 25.3 | Object with structural components, possibly the remains of a barge | Side-scan | M.074 | Y |
| S.0012 | | | Channel marker | 15.3 | 42.3 | 35.3 | 81.2 | Pilings associated with a channel marker | Nav chart, side-scan | M.014 | - |

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| Contact | X ¹ REMOVED | Y ¹ REMOVED | Class | Height (m) | Length (m) | Width (m) | Shadow (m) | Description | Data Class | Assoc. | Potentially Significant |
|---------|---------------------------|---------------------------|----------------|---------------|---------------|--------------|---------------|--|----------------------|----------------|-------------------------|
| S.0013 | | | Debris | 1 | 24.5 | 2.1 | 3.6 | Unknown object, possibly modern debris | Side-scan | M.039 | - |
| S.0014 | | | Channel marker | 15.2 | 8.6 | 3.5 | 81 | Piling associated with a channel marker | Nav chart, side-scan | M.027 M.029 | - |
| S.0015 | | | Structural | 1.1 | 64.7 | 9.4 | 7.2 | Unknown object with structural components, associated with high intensity magnetic anomaly | Side-scan, mag | M.035 | Y |
| S.0016 | | | Channel marker | 13.4 | 9.9 | 3.8 | 80.4 | Pilings associated with a channel marker | Nav chart, side-scan | M.036 | - |

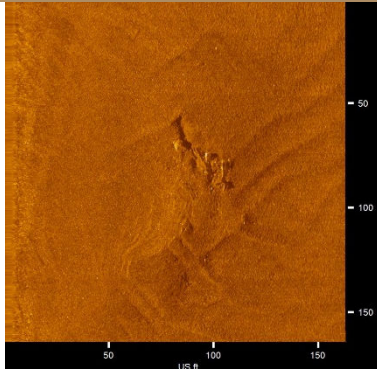
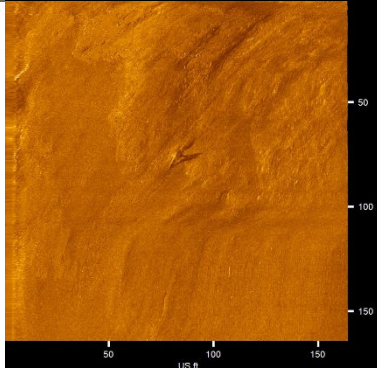
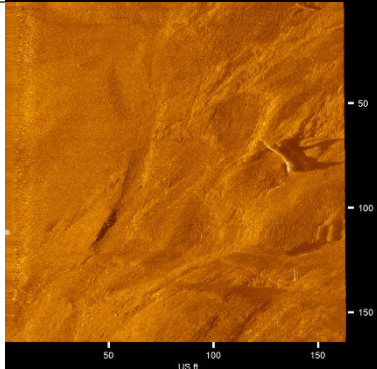
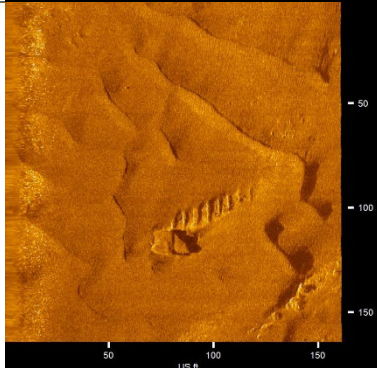
¹ Coordinates in NAD83 California Zone 2, U.S. feet.

² Mag: Magnetometer

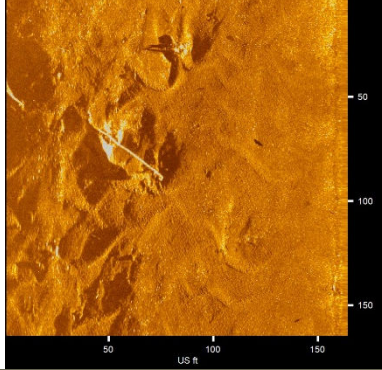
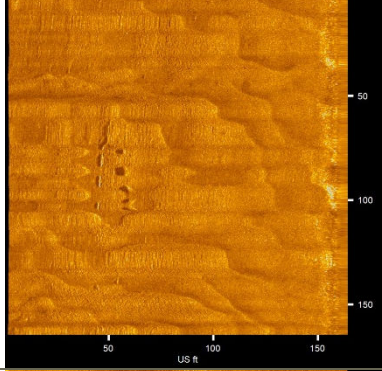
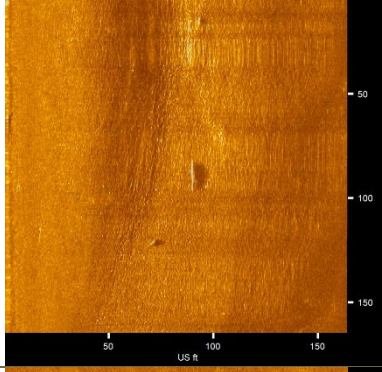
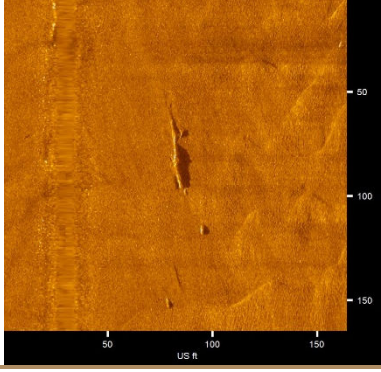
³ Nav Chart: Navigation Chart

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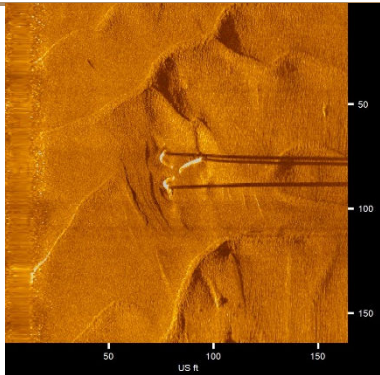
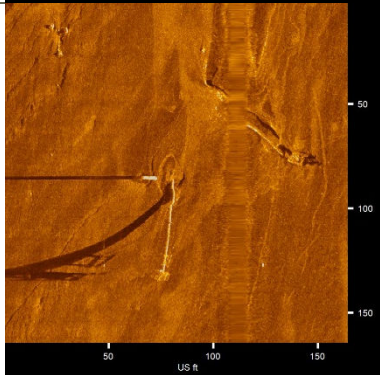
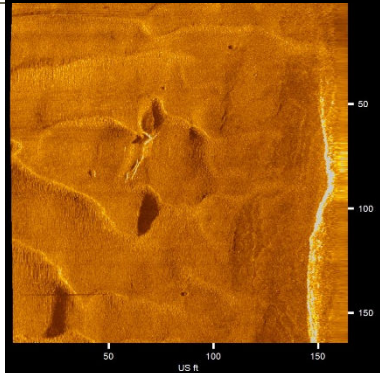
Table 5-4. Sonar Report

| Target Image | Target Info | User Entered Info |
|---|---|---|
|  | <p>S.0001</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/4/2023 5:54:04 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: LSP_20231004_COLLINSVILLE_002.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 11.44 US ft ● Target Height: 1.26 US ft ● Target Length: 35.01 US ft ● Target Shadow: 6.61 US ft ● Mag Anomaly: M.068 ● Classification1: Debris Scatter ● Description: Debris scatter of an unknown origin, likely modern |
|  | <p>S.0002</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/4/2023 6:42:36 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: LSP_20231004_COLLINSVILLE_004.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 1.66 US ft ● Target Height: 2.00 US ft ● Target Length: 15.64 US ft ● Target Shadow: 11.84 US ft ● Mag Anomaly: M.065 ● Classification1: Cable ● Description: Linear object associated with high intensity magnetic anomaly, likely cable |
|  | <p>S.0003</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/4/2023 6:43:18 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: LSP_20231004_COLLINSVILLE_004.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 1.98 US ft ● Target Height: 3.57 US ft ● Target Length: 26.80 US ft ● Target Shadow: 26.99 US ft ● Mag Anomaly: M.065 ● Classification1: Cable ● Description: Linear object associated with high intensity magnetic anomaly, likely cable |
|  | <p>S.0005</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/4/2023 8:39:27 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: LSP_20231004_COLLINSVILLE_014.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 25.53 US ft ● Target Height: 1.32 US ft ● Target Length: 54.95 US ft ● Target Shadow: 4.14 US ft ● Mag Anomaly: M.057 ● Classification1: Structural ● Description: Unknown object with structural components |

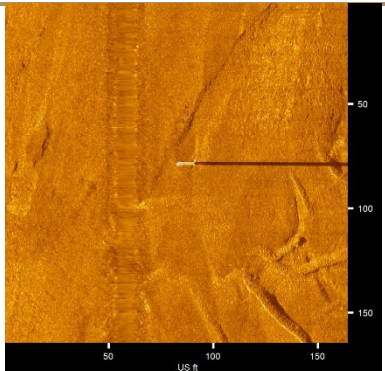
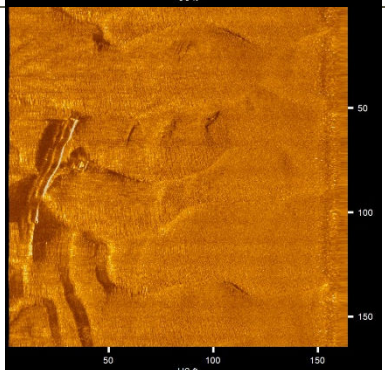
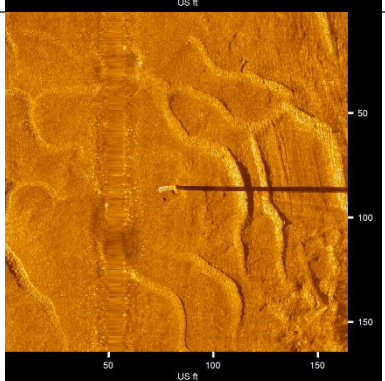
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| Target Image | Target Info | User Entered Info |
|---|--|--|
|  | <p>S.0006</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/16/2023 7:21:55 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: 20231016.002.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 0.99 US ft ● Target Height: 1.98 US ft ● Target Length: 42.60 US ft ● Target Shadow: 17.35 US ft ● Mag Anomaly: M.012 ● Classification1: Cable ● Description: Linear object associated with high intensity magnetic anomaly, likely cable |
|  | <p>S.0007</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/16/2023 7:54:20 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: 20231016.003.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 15.42 US ft ● Target Height: 0.50 US ft ● Target Length: 23.90 US ft ● Target Shadow: 2.48 US ft ● Mag Anomaly: ● Classification1: Debris ● Description: Series of objects protruding from sea floor |
|  | <p>S.0008</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/16/2023 8:28:11 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: 20231016.007.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 0.55 US ft ● Target Height: 0.55 US ft ● Target Length: 14.90 US ft ● Target Shadow: 7.99 US ft ● Mag Anomaly: M.005 ● Classification1: Cable ● Description: Linear object associated with magnetic anomaly, likely cable or modern debris |
|  | <p>S.0009</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/16/2023 10:37:04 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: 20231016.012.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 2.81 US ft ● Target Height: 2.89 US ft ● Target Length: 36.56 US ft ● Target Shadow: 8.26 US ft ● Mag Anomaly: M.062, M.073 ● Classification1: Cable ● Description: Linear object associated with magnetic anomalies, likely cable |

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| Target Image | Target Info | User Entered Info |
|---|---|---|
|  | <p>S.0010</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/17/2023 7:25:47 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: 20231017.005.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 24.03 US ft ● Target Height: 12.12 US ft ● Target Length: 25.84 US ft ● Target Shadow: 81.65 US ft ● Mag Anomaly: M.011 ● Classification1: Channel Marker ● Description: Pilings associated with a channel marker |
|  | <p>S.0011</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/17/2023 7:40:20 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: 20231017.005.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 14.15 US ft ● Target Height: 3.04 US ft ● Target Length: 39.36 US ft ● Target Shadow: 25.34 US ft ● Mag Anomaly: M.074 ● Classification1: Wreck ● Description: Object with structural components, possibly the remains of a barge |
|  | <p>S.0012</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/18/2023 5:37:59 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: 20241018.001.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 35.30 US ft ● Target Height: 15.39 US ft ● Target Length: 42.25 US ft ● Target Shadow: 81.24 US ft ● Mag Anomaly: M.014 ● Classification1: Channel Marker ● Description: Pilings associated with a channel marker |
|  | <p>S.0013</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/18/2023 6:37:36 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: 20241018.002.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 2.10 US ft ● Target Height: 1.02 US ft ● Target Length: 24.50 US ft ● Target Shadow: 3.58 US ft ● Mag Anomaly: M.039 ● Classification1: Debris ● Description: Unknown object, possibly modern debris |

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| Target Image | Target Info | User Entered Info |
|---|---|--|
|  | <p>S.0014</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/18/2023 7:03:13 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: 20241018.003.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 3.55 US ft ● Target Height: 15.15 US ft ● Target Length: 8.56 US ft ● Target Shadow: 80.97 US ft ● Mag Anomaly: M.027, M.029 ● Classification1: Channel Marker ● Description: Piling associated with a channel marker |
|  | <p>S.0015</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/18/2023 8:37:28 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: 20241018.005.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 9.37 US ft ● Target Height: 1.11 US ft ● Target Length: 64.70 US ft ● Target Shadow: 7.16 US ft ● Mag Anomaly: M.035 ● Classification1: Structural ● Description: Unknown object with structural components, associated with high intensity magnetic anomaly |
|  | <p>S.0016</p> <ul style="list-style-type: none"> ● Sonar Time at Target: 10/18/2023 9:38:55 PM ● COORDINATES REMOVED ● Map Projection: EPSG:6418 ● Acoustic Source File: 20241018.008.jsf | <p>Dimensions and attributes</p> <ul style="list-style-type: none"> ● Target Width: 3.79 US ft ● Target Height: 13.39 US ft ● Target Length: 9.91 US ft ● Target Shadow: 80.41 US ft ● Mag Anomaly: M.036 ● Classification1: Channel Marker ● Description: Pilings associated with a channel marker |

Note: Coordinates in NAD83 California Zone 2, US feet.

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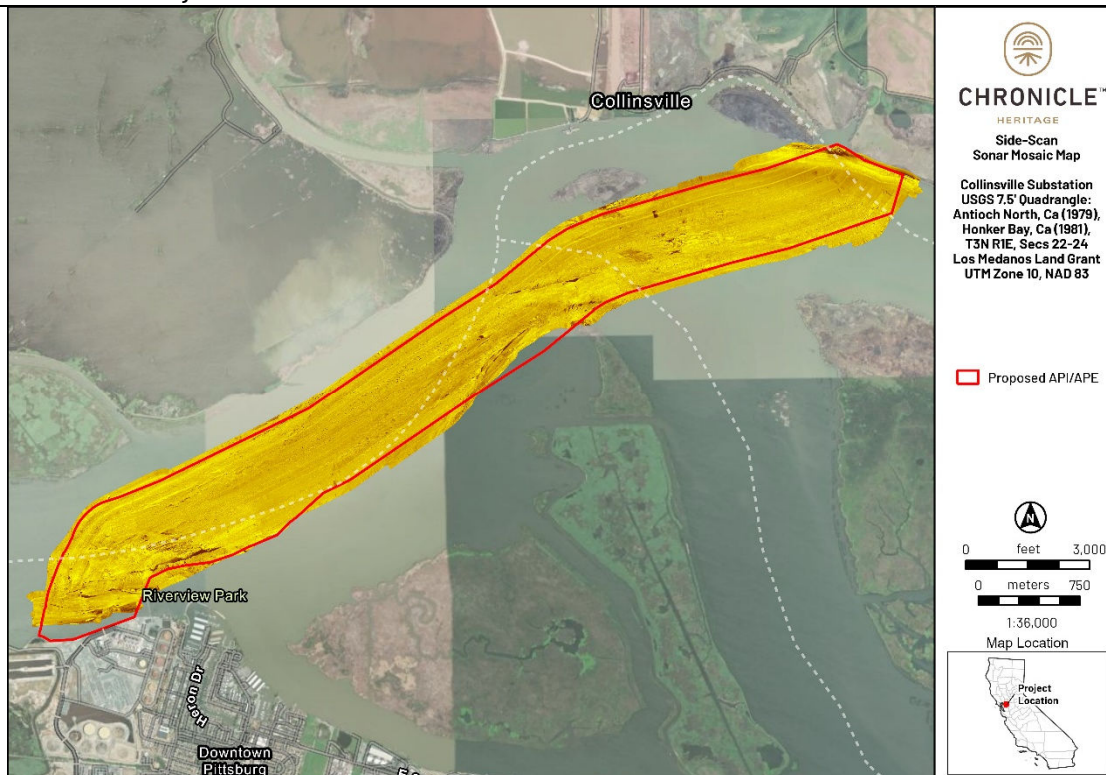


Figure 5-19. Side-scan sonar mosaic illustrating coverage of the maritime Survey area.

5.8 Subbottom Profiler Results

The review of shallow seismic (subbottom profiler) data for this project included 19 gigabytes of data across the Proposed API/APE. These data were first bottom tracked to the first return then amplified using an Automatic Gain Control (AGC) algorithm. Penetration was typically 6–7 m (approximately 20–23 ft) below the mudline (BML) in the Proposed API/APE (Figure 5-20). It should be noted that no surface expressions of paleofeatures with the potential to contain preserved precontact sites, such as chert outcrops or exposed middens, were recorded on side-scan sonar records. Thus, these features were limited to interpretation from subbottom profiler data.

Analysis of the subbottom profiler record indicated the Proposed API/APE was composed of unconsolidated marine sediments (sand) to the depth of the instrument's capability, typically 5–6 m (16–19 ft). The shallow seismic records were dominated by high-amplitude reflectors (riverbed) underlaid with chaotic facies with rare defined reflectors. A total of 21 subbottom profiler reflectors associated with 12 geomorphological features in the form of relict channel landforms were identified within the Proposed API/APE (Figure 5-21). However, a majority of these paleochannels did not appear on adjacent lines, indicating that the channel, as a whole, is no longer intact due to the dynamic nature of such waterways.

Two sets of paleochannels, however were identified across multiple survey lines. Feature 5 was identified across two adjacent lines, indicating the remnants of a relict paleochannel. However, the margins of this paleochannel, and the majority of other paleochannels identified in the dataset, were mostly truncated, as the channel intersected the extents of the current riverbed. Thus, the area in which cultural material could be located has been removed or dispersed by dynamic wave, and subsequently, sediment movement.

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On a second review of the dataset, Feature 7 (Figure 5-20), another paleochannel with margins, was identified. The margins of this paleochannel were largely intact, and incline to form a terrace or levee on either side. These types of elevated landforms contain the potential for cultural material and indigenous archaeological sites. The terraced landform ranged from a depth of 4 to 8 feet below seafloor (BSF).

However, while this feature was initially thought to cross seven survey transects through and into the Proposed API/APE, upon closer analysis each cross section differed markedly from the others indicating a noncontinuous landform but rather separate and independent features. This argues that what is represented by the subbottom record is a braided network of constantly changing and shifting river channels. Subsequently, the dynamic nature of this area also argues for a low probability of the potential for intact cultural material deposits.

That said, the landform area is currently being evaluated through coring and soil analysis. While the probability is low for the presence of cultural material, if sediment analysis indicates the potential for prehistoric presence, a monitoring plan to mitigate impacts to the paleolandform will be developed, approved by the review agency, and implemented (e.g., archaeological monitoring via vacuum-water screening at the surface).

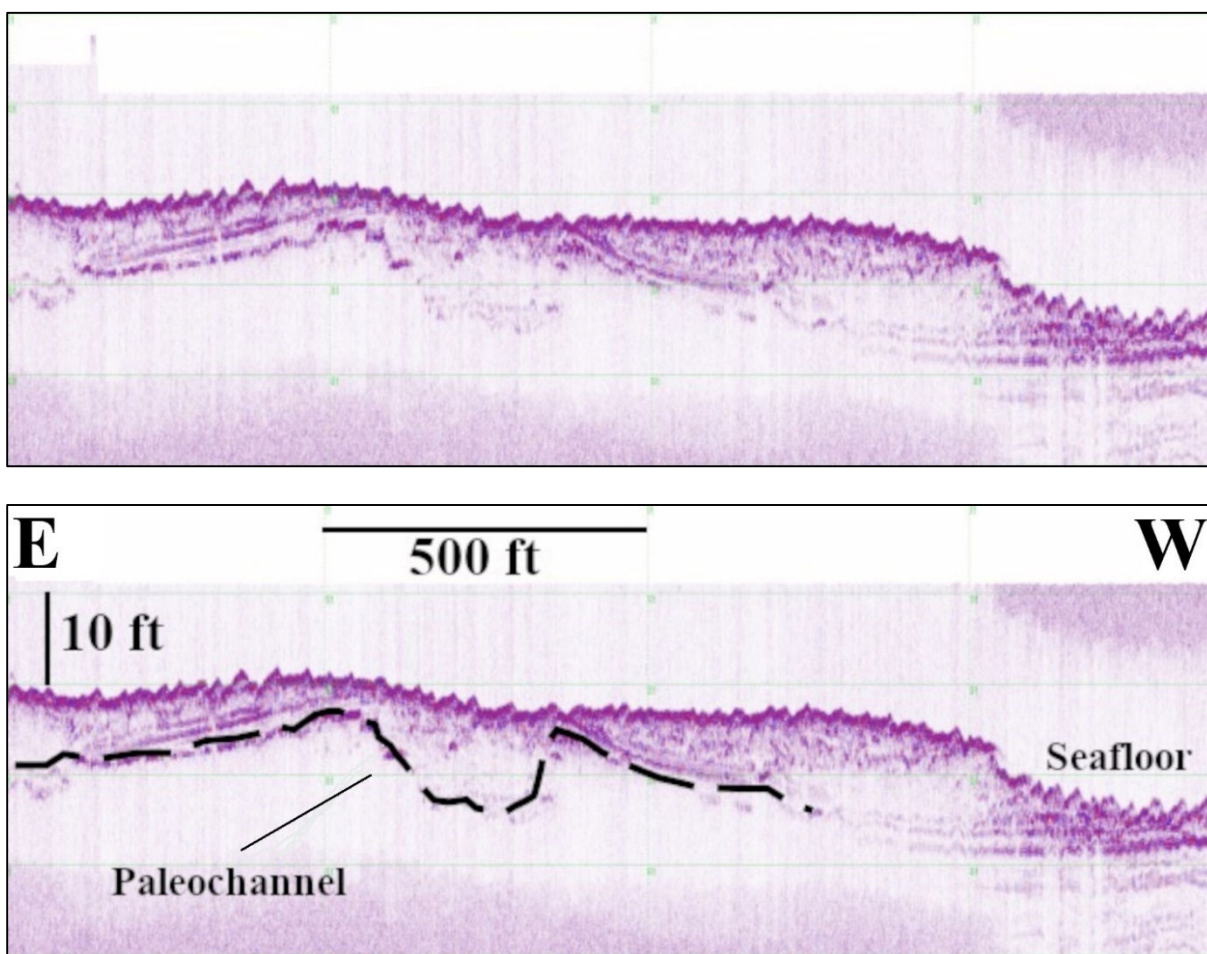


Figure 5-20. Example of Subbottom Feature 007 (F7) from the maritime survey area. This profile is provided in both unannotated (above) and annotated (below) formats.

FIGURE REMOVED

Figure 5-21. Subbottom profiler features identified within the Proposed API/APE, Feature 7 can be seen outlined in blue, crossing the cable corridor boundary.

5.9 Potentially Significant Targets

Analysis of the remote sensing data identified three ($n = 3$) potentially significant targets within the Proposed API/APE (Table 5-5; Figure 5-22). Each of these targets included a magnetic anomaly and a side-scan sonar contact. Target 1 was magnetic anomaly M.057 and sonar contact S.0005. Target 2 was magnetic anomaly M.035 and sonar contact S.0015. Target 3 was magnetic anomaly M.074 and sonar contact S.0011. Diver investigation column indicates if diver investigation on each target is recommended.

Table 5-5. Potentially Significant Targets

| Target | X ¹ REMOVED | Y ¹ REMOVED | Assoc. | Notes | Avoidance Radius (ft) |
|----------|---------------------------|---------------------------|---------------|---|-----------------------|
| Target 1 | | | M.057, S.0005 | Contact with possible vessel-like structural components falls within radius for large, intense anomaly. Anomaly likely associated with infrastructure | 100 |
| Target 2 | | | M.035, S.0015 | Contact with structural components, associated with magnetic anomaly. | 100 |
| Target 3 | | | M.074, S.0011 | Remains of a barge, low intensity magnetic anomaly indicated wooden construction | 100 |

¹Coordinates in NAD83 California Zone 2, US feet

FIGURE REMOVED

Figure 5-22. Location of potentially significant targets identified during the remote sensing survey.

5.9.1 Target 1

Illustrated in Figure 5-23 and Figure 5-24, Target 1 is located approximately 845 feet southeast of the closest cable lay within the corridor in the southern portion of the maritime survey area. Target 1 included magnetic anomaly M.057 and side-scan sonar contact S.0005. M.057 was identified as a complex magnetic anomaly with an intensity of 198.2 nT and a duration of 311.83 ft. Side-scan sonar contact S.0005 was classified as possible vessel like structural components, measuring 55 feet long, 25.5 feet wide, with a height of 1.3 ft. It must be noted that the location of Target 1 is adjacent to infrastructure, therefore, it cannot be determined if contact S.0005 contains a magnetic signature; meanwhile, it is highly probable that magnetics associated with S.0005 were absorbed into the overall magnetic signature of the nearby infrastructure. Nevertheless, due to the possible vessel like structural components of Target 1, the target must be considered to possibly represent a potentially significant cultural resource.

Because of the distance from the cable lay, avoidance of Target 1 can be accomplished, which will preclude and mitigate any potential adverse effect. Located approximately 845 feet from the actual cable lay, Target 1's proximity to the cable corridor renders the importance for positional accuracy throughout project activities. Prior to these activities (i.e., jetting, anchoring, etc.), all personnel and vessels involved in Proposed Project construction activities will be made aware of the Target's location to ensure avoidance.

FIGURE REMOVED

Figure 5-23. Target 1: Acoustic image of associated sonar contact, S.0005 (top), magnetic contours of associated anomaly, M.057 (bottom).

FIGURE REMOVED

Figure 5-24. Target 1 location showing 845 feet distance (yellow line) from nearest cable lay. The target will be avoided by any and all potential adverse impacts associated with the project.

5.9.2 Target 2

Illustrated in Figure 5-25 and Figure 5-26, Target 2 is located approximately 195 feet southeast of the closest cable lay within the corridor in the northern portion of the maritime survey area at the junction of Broad Slough and the Sacramento River. Target 2 is comprised of magnetic anomaly M.035 and side-scan sonar contact S.0015. M.035 was identified as a complex magnetic anomaly with an intensity of 817.81 nT and a duration of 276.19 ft. Side-scan sonar contact S.0015 was classified as possible vessel like structural components, measuring 64.7 feet long, 9.4 feet wide, with a height of 1.1 ft. It must be noted that the location of Target 2 is adjacent to a channel marker; therefore, it cannot be determined if contact S.0015 contains a magnetic signature. Meanwhile, it is highly probable that magnetics associated with S.0015 were absorbed into the overall magnetic signature of the nearby channel marker. Nevertheless, due to the possible vessel like structural components of Target 2, the target must be considered to possibly represent a potentially significant cultural resource.

Because of the distance from the cable lay, avoidance of Target 2 can be accomplished, which will preclude and mitigate any potential adverse effect. Located approximately 195 feet from the actual cable lay, Target 2's close proximity to the cable corridor renders the importance for positional accuracy throughout project activities. Prior to these activities (i.e., jetting, anchoring, etc.), all personnel and vessels involved in Proposed Project construction activities will be made aware of the Target's location to ensure avoidance.

FIGURE REMOVED

Figure 5-25. Target 2: Acoustic image of associated sonar contact, S.0015 (top), magnetic contours of associated anomaly, M.035 (bottom).

FIGURE REMOVED

Figure 5-26. Target 2 location showing 195 feet distance (yellow line) from nearest cable lay. The target will be avoided by any and all potential adverse impacts associated with the project.

5.9.3 Target 3

Illustrated in Figure 5-27 through Figure 5-29, Target 3 is located approximately 155 feet south of the closest cable lay in the northern portion of the maritime survey area at the junction of Broad Slough and the Sacramento River. Target 3 includes magnetic anomaly M.074 and side-scan sonar contact S.0011. M.074 was identified as a dipole with an intensity of 15.45 nT and a duration of 207.3 ft. Contact S.0011 is rectangular in shape and measured 39.4 feet long, 14.2 feet wide, with a height of 3 ft. Its shape indicating a possible barge, the low intensity of the associated magnetic anomaly indicates that the possible watercraft is of wooden construction, lending to its likely historic nature relative to age. Structural components include transverse (side to side) and longitudinal frames. Because it is unknown if the barge is upside down or right side up, it is unknown if these represent floor futtocks and keelsons, or deck beams and stringers. Believed to represent the remains of a wooden barge-like watercraft, the target must be considered to represent a potentially significant cultural resource.

Because of the distance from the cable lay, avoidance of Target 3 can be accomplished, which will preclude and mitigate any potential adverse effect. Located approximately 155 feet from the actual cable lay, Target 3's somewhat close proximity to the cable corridor renders the importance for positional accuracy throughout project activities. Prior to these activities (i.e., jetting, anchoring, etc.), all personnel and vessels involved in Proposed Project construction activities will be made aware of the Target's location to ensure avoidance.

FIGURE REMOVED

Figure 5-27. Target 3: Acoustic image of associated sonar contact, S.0011 (top), magnetic contours of associated anomaly, M.074 (bottom).

FIGURE REMOVED

Figure 5-28. Target 3 location showing 155 feet distance (yellow line) from nearest cable lay. The target will be avoided by any and all potential adverse impacts associated with the project.

FIGURE REMOVED

Figure 5-29. Target 3: Its shape indicates a possible barge, structural components include transverse (side to side) and longitudinal frames.

6 Conclusions and Recommendations

eTrac, Inc., conducted a Phase 1 SCRAS on behalf of Chronicle Heritage. This investigation comprises a comprehensive geophysical investigation, including a magnetometer, side-scan

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sonar, and subbottom profiler, of the LSPGC 230 Kilovolt Submarine Cable Proposed API/APE. The Proposed API/APE is located on the lower Sacramento River and upper reaches of Suisun Bay within Contra Costa, Sacramento, and Solano counties, California.

The investigation revealed three potentially significant targets. Each target included a side-scan sonar contact and a magnetic anomaly. The acoustic contacts associated with Target 1 and Target 2 contained vessel-like structural components. Although their identity could not be determined, their structural characteristics indicate they may represent potentially significant cultural resources. Target 3 is believed to represent the remains of a wooden barge-like watercraft, and the target must be considered to represent a potentially significant cultural resource.

As stated in NRHP Bulletin 15, *How to Apply the National Register Criteria for Evaluation* (National Park Service n.d.), properties found potentially eligible, eligible, or listed on the NRHP must be considered within the framework of the proposed action. If adverse impact to such property is possible, alternatives to the proposed action (i.e., avoidance), must be evaluated. Because of the distance from the cable lay, avoidance of targets can be accomplished, which will preclude and mitigate any potential adverse effect. Located over 100 ft from the actual cable lays, the proximity of Targets 1, 2, and 3 to the cable corridor renders the importance for positional accuracy throughout project activities. Prior to these activities (i.e., jetting, anchoring, etc.), all personnel and vessels involved in Proposed Project construction activities will be made aware of the Targets' locations to ensure avoidance.

In addition, one paleolandform was identified within the Proposed API/APE. While this feature was initially thought to cross 7 survey transects and through and into the Proposed API/APE, upon closer analysis each cross section differed markedly from the other indicating a noncontinuous landform with separate and independent features. This argues that what is represented by the subbottom record is a braided network of constantly changing and shifting river channels. Subsequently, the dynamic nature of this area also argues for a low probability of the potential for intact cultural material deposits.

That said, the landform area is currently being evaluated through coring and soil analysis. While the probability is low for the presence of cultural material, if sediment analysis indicates the potential for prehistoric presence, a monitoring plan to mitigate impacts to the paleolandform will be developed, approved by the review agency, and implemented (e.g., archaeological monitoring via vacuum-water screening at the surface).

6.1 Procedures to Deal with Unexpected Submerged Cultural Discoveries

Despite the intensive cultural resource survey and analysis investigations that have been performed in anticipation of the Proposed Project, it is possible that cultural resource deposits, in the form of prehistoric or historic archaeological sites, may be discovered during construction. Details and procedures for the handling of these unanticipated discoveries will be outlined in an Unanticipated Discoveries Plan which will be developed and submitted for approval prior to construction. Based on the actual construction methods which are not known at this time, the Unanticipated Discoveries Plan will recommend mitigation measures to guide the identification of cultural material or resources (e.g., archaeological monitoring via vacuum-water screening at the surface in moderate to high sensitivity areas, or a Workers' Environmental Awareness Training program that educates the underwater construction team about what to look for (i.e., aboriginal pottery, precontact stone tools, bone, or shell tools, as well as historic shipwreck remains).

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Submerged Cultural Resources Assessment Survey for the Collinsville 500/230 kV Substation Project, Solano, Sacramento, and Contra Costa Counties, California

1979 Antioch North, California, 7.5-minute topographic quadrangle map, scale 1:62,500.

2018 Honker Bay, California, 7.5-minute topographic quadrangle map, scale 1:62,500.

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Wilson, William J., and P.W. Gates

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Wilson, William J., Stephen R. James, and Erica K. Gifford

2019 Archaeological Diver Investigations of Remote Sensing Anomalies in the St. Augustine Flood Shoal and Intracoastal Waterway Project, St. Johns County, Florida. Prepared for the U.S. Army Corps of Engineers, Jacksonville District by Panamerican Consultants, Inc., Memphis, Tennessee.

Appendix A. Qualifications

National Society of Professional Surveyors



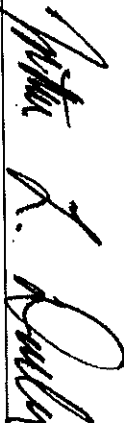
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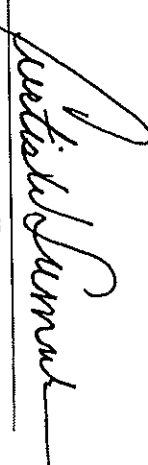
Nicholas George

*has met the requirements established by
the National Society of Professional Surveyors
Hydrographer Certification Board
for certification as*

Hydrographer

by Authority of the Board of Directors


Chairman, Certification Board


Executive Director

Certificate Number 341

Date 3/5/2021



Stephen R. James, M.A., RPA, Director of Maritime Division/Maritime Archaeologist

Experience Profile

Director of PaleoWest's Maritime Division, Mr. James has over 30-years-experience as a maritime archaeologist. Mr. James has directed and managed submerged cultural resource projects of all types throughout the United States, the Caribbean, South Pacific, and Southeast Asia. He has acted as Project Manager and/or Principal Investigator on IDIQs for the U.S. Army Corps of Engineers Minneapolis/St. Paul, Detroit, Sacramento, Jacksonville, New York, Mobile, Philadelphia, Savannah, and Wilmington Districts. His experience includes extensive experience for other federal and state agencies, corporations, and non-profit organizations. Mr. James is thoroughly familiar with federal preservation laws and regulations, preservation compliance, site evaluation, the National Register process, and formulation and implementation of predictive modeling. He is responsible for developing PaleoWest's remote sensing survey capabilities which include satellite positioning and navigation systems, terrestrial and marine magnetometers, sidescan sonar systems and subbottom profilers. He is also responsible for developing PaleoWest's diving capabilities including development of Dive Operations and Safety Plans, all geared predominantly to Surface Supplied systems for their inherent safety factor. Certified by the Register of Professional Archaeologists since 1985, Mr. James is a graduate of the U.S. Army Corps of Engineers Dive Supervisor and Safety Course, Florida Keys Community College, Key West.

Representative Commonwealth Projects

2023 (Selected)

Project Manager, Oregon Inlet Submerged Cultural Resources Survey, Dare County, North Carolina. Conducted for the USACE Jacksonville District.

Project Manager, Phase II NRHP Assessment and Archival Research of USSB WWI Emergency Fleet Hulks, Stony Point Cove, Delaware Bay, New Jersey. Conducted under subcontract to AKRF, New York.

Project Manager, Phase I Stony Point Submerged Cultural Resources Survey, Stony Point Cove, Delaware Bay, New Jersey. Conducted under subcontract to AKRF, New York.

Project Manager, Conservation and Archival Research on Revolutionary War Cannon Recovered from the Savannah River, Savannah, Georgia. USACE Jacksonville District.

2022 (Selected)

Project Manager, Submerged Cultural Resources Survey, Woodtick Peninsula, Lake Erie, Michigan – USACE Detroit and St. Louis Districts

Project Manager, Savannah Harbor Expansion Project Archaeological Monitoring, Savannah, Georgia, – Weeks Marine, Inc., and USACE Jacksonville District

Project Manager, Cultural Resources Survey for the Charleston to Port Royal channel Realignment, Beaufort and Charleston Counties, South Carolina. Underwater Remote Sensing Survey of the Atlantic Intracoastal Waterway conducted for the U.S. Army Corps of Engineers, Charleston District

2021 (Selected)

Project Manager/Principal Investigator, Fire Island to Montauk Diver Identification and GIS, Long Island, New York, 2021 – USACE New York District.

Project Manager/Principal Investigator, Submerged Cultural Resources Data Recovery of Site 38JA1178 and Artifact Recovery of Site 9CH1552, Savannah Harbor Expansion Project, Savannah, Georgia. Conducted for the USACE, Jacksonville District.

Project Manager/Principal Investigator, Submerged Cultural Resources Survey and Diver Identification, Savannah Harbor Expansion Project, Savannah, Georgia. Conducted for the USACE, Jacksonville District.



Education:

M.A., Anthropology,
Institute of Nautical
Archaeology, Texas A&M,
1985

B.A., Anthropology,
Memphis State University,
1979

Professional

Affiliations:

Society for Historical
Archaeology

Register of Professional
Archaeologists



Stephen R. James, M.A., RPA, Director of Maritime Division/Maritime Archaeologist

Project Manager/Principal Investigator, Miami-Dade Submerged Cultural Resources Management Survey, Miami, Florida, 2021 – USACE Jacksonville District

2020 (Selected)

Project Manager, Submerged Cultural Resources Survey and Diver Investigation of Targets, Intracoastal Waterway Near the Jupiter Inlet, Palm Beach and Martin Counties, Florida. Conducted for the USACE, Jacksonville District.

Project Manager, American Intracoastal Waterway (AIWW), Nassau Sound (Sawpit Creek Vicinity), and Fernandina Harbor (Amelia River), Submerged Cultural Resources Survey, Nassau and Duval Counties, Florida. Conducted for the USACE, Jacksonville District.

Project Manager, Savannah River Below Augusta Training Wall Submerged Cultural Resources Survey and Diver Evaluations, Richmond County, Georgia and Aiken County, South Carolina. Conducted for the USACE, Jacksonville District.

Project Manager, Phase I Archaeological Marine Survey of 3670 Survey Line Miles for Proposed Artificial Reef Zones in Mobile Bay and Gulf of Mexico Offshore Alabama. Conducted for the Alabama Department of Conservation and Natural Resources.

Project Manager/Principal Investigator, Cultural Resources Remote Sensing Survey of the Gravesend Anchorage Area for the New York and New Jersey Harbor Anchorage Study, Kings County, New York. Conducted for the USACE, New York District.

2019 (Selected)

Project Manager, Davis Shores Shoal Investigations Associated with the Archaeological Diver Identification of Remote Sensing Anomalies in the St. Augustine Flood Shoal and Intercostal Waterway Project, St. Johns County, Florida. Conducted for the USACE, Jacksonville District.

Project Manager/Principal Investigator, Submerged Cultural Resources Survey and Terrestrial Archaeological and Magnetometer Survey for the Mid-Reach Sand Stockpile, Brevard County, Florida. USACE, Jacksonville District.

Project Manager/Principal Investigator, Submerged Cultural Resources Survey of St. Lucie River/Okeechobee Waterway Project, Martin County, Florida. USACE, Jacksonville District.

Project Manager/Principal Investigator, Anclote River Federal Navigation Project Submerged Cultural Resources Survey and Terrestrial Phase I Survey Pasco and Pinellas Counties, Florida. USACE, Jacksonville District.

2018 (Selected)

Project Manager/Principal Investigator, Canaveral Harbor Sand Bypass, Submerged Cultural Resources Survey and Archaeological Reconnaissance Survey, Brevard County, Florida. USACE, Jacksonville District.

Project Manager/Principal Investigator, Gulf Inland Waterway Federal Navigation Project Sarasota County, Florida Submerged And Terrestrial Cultural Resources Survey. USACE, Jacksonville District.

Project Manager/Principal Investigator, Submerged Cultural Resources Assessment Survey of Approximately 3,000 Line Miles for Priority Water Bottoms in the Mobile Bay Area, Mobile & Baldwin Counties, Alabama. Mobile Bay National Estuary Program.

2017 (Selected)

Project Manager/Principal Investigator, Phase III Data Recovery 2017 Field Season of the CSS Georgia. USACE, Savannah District under subcontract to DCA/GEC Joint Venture, LLC.

2016 (Selected)

Project Manager/Principal Investigator, Archaeological Data Recovery of the *Adriatic*, Sturgeon Bay, Wisconsin. Fincantieri Bay Shipbuilding Company.

Project Manager/Principal Investigator, Underwater Archaeological Survey and Diver Assessment/Evaluation for Future Extension Concept/2014B Revised Bridge Location, Bonner Bridge Project in Currituck and Dare Counties, North Carolina. STIP No. B-2500. Conducted for the NC Department of Transportation under subcontract to Parsons Brinkerhoff, Inc.



RIKKI OETERS MILEWSKI, M.A., RPA

Associate Maritime Archaeologist

EDUCATION

M.A., University of West Florida, 2023

B.A., East Carolina University, 2017

YEARS OF PROFESSIONAL EXPERIENCE

3

YEARS WITH FIRM

3

REGISTRATIONS / CERTIFICATIONS

Register of Professional Archaeologists #5684

Surface-supplied Diving Supervisor (2023)

Surface-supplied Diver (2022)

Red Cross CPR & First Aid (bi-annual)

PROFESSIONAL AFFILIATIONS

Society for Historical Archaeology

Rikki Oeters Milewski is a maritime archaeologist with over three years of experience in cultural resources management (CRM). She currently serves as an associate archaeologist for Chronicle Heritage's Maritime Division.

Rikki joined Chronicle Heritage in 2021 and completed her M.A. in Maritime Archaeology from the University of West Florida in 2023. She has participated in remote sensing/geophysical and diving investigations for Chronicle Heritage. She has served as GIS specialist, surface-supplied diver, surface-supplied diving supervisor, surface-supplied diver tender, remote sensing survey technician, and archival and historical background researcher on cultural resources investigations conducted for the USACE, Jacksonville, Mobile, New York, Philadelphia, Wilmington, and Savannah districts, the U.S. EPA Great Lakes National Program Office, and various other federal agencies, and private clients. She is skilled in the processing of collected data, the utilization of Sonar WizMap[®] side-scan mosaicking and subbottom profiler analysis software, the use of MagPick magnetometer processing software, various forms of GIS software platforms, archival and historical background research, and report authoring for submerged remote-sensing surveys and archaeological diver investigations.

SELECT RECENT PROJECT EXPERIENCE

Propel Energy Project, New York. *Associate Archaeologist (2024).* A comprehensive remote-sensing survey was conducted to determine the presence of cultural material. Mrs. Milewski conducted archival research, processed and analyzed geophysical data, acted as GIS specialist, and authored the report. Client: WSP USA, Inc.

Intensive Cultural Resource Remote Sensing Survey for the Flagler County, FL Beach and Dune Restoration Project, Flagler County, FL. *Associate Archaeologist (2024).* A comprehensive remote-sensing survey was conducted to determine the presence of cultural material. Mrs. Milewski conducted archival research, assisted with processing and analyzing geophysical data, acted as GIS specialist, and co-authored the report. Client: Olsen and Associates, Inc.

Submerged Cultural Resources Assessment Survey Borrells Creek Bridge Replacement. *Associate Archaeologist (2024).* A magnetometer survey with subsequent site plan recording of a previously identified archaeological site (9CM589) was conducted to determine the extents and exposure of the site. Mrs. Milewski processed and analyzed geophysical data, acted as GIS specialist, and authored the report. Client: Georgia Department of Transportation (GDOT)

Submerged Cultural Resources Assessment Survey Stillwell Road, Effingham County, GA. *Associate Archaeologist (2024).* A side-scan sonar survey was conducted to determine the presence of cultural material. Mrs. Milewski processed and analyzed geophysical data, acted as GIS specialist, and authored the report. Client: Atlas Technical Consultants.



NEOM Heritage Project Phase 2, Gulf of Aqaba, Kingdom of Saudi Arabia. *Associate Archaeologist (2024).* A comprehensive remote-sensing survey with subsequent diver investigations and diver survey was conducted to determine the presence of cultural material. Mrs. Milewski processed and analyzed geophysical data, acted as GIS specialist, served as an archaeological diver, and co-authored the report. Client: NEOM Heritage

Insignia Collinsville Substation, Submerged Cultural Resources Survey, Sacramento, CA. *Associate Archaeologist (2023).* A comprehensive remote-sensing survey was conducted to determine the presence of cultural resources. Mrs. Milewski conducted archival and historic background research, processed and analyzed geophysical data, acted as GIS specialist, and authored the report. Client: Collinsville Substation Energy

Brunswick Harbor Modifications, Submerged Cultural Resources Survey and Diver Identification, Glynn County, GA. *Associate Archaeologist (2023).* A comprehensive remote-sensing survey and a remote-sensing refinement survey with subsequent diver investigations was conducted to determine the cultural significance of identified targets deemed potentially significant. Rikki conducted archival and historic background research, acted as GIS specialist, and co-authored the report. Client: USACE, Jacksonville District

Gulf Intracoastal Waterway, Longboat Pass Placement, Submerged Cultural Resources Survey and Archaeological Diver Investigations, Manatee County, FL. *Associate Archaeologist (2023).* A comprehensive remote-sensing survey of a nearshore placement area was conducted to assess the presence of submerged cultural resources. A remote-sensing refinement survey with subsequent diver investigations was conducted to determine the cultural significance of previously identified targets deemed potentially significant. Rikki conducted archival and historic background research, served as field director and assistant dive supervisor, recorded diver investigation data, acted as GIS specialist, and co-authored the report. Client: USACE, Jacksonville District

Report on the Monitoring of Four Known Shipwrecks in Connection with the Sea Bright to Manasquan Inlet, Coastal Storm Risk Management and Erosion Control Project, Monmouth County, NJ. *Associate Archaeologist (2023).* A desktop monitoring report was conducted to synthesize previous investigations of four known shipwrecks. Rikki assisted with the completion of the report. Client: USACE, New York District

St. Nicholas Cemetery Geophysical Survey Report, Patuxent River Naval Air Station, St. Mary's County, MD. *Associate Archaeologist (2023).* A geophysical survey was conducted to determine the location of gravestones and marked and unmarked graves. Rikki assisted with the completion of the report. Client: Marstel-Day, LLC

NEOM Submerged Cultural Resources Assessment Survey, Saudi Arabia. *Associate Archaeologist (2023).* A comprehensive remote-sensing survey was conducted to assess the presence of submerged cultural resources. Rikki assisted with the completion of the report. Client: NEOM Heritage

Cultural Resources Remote Sensing Survey of the Proposed Stony Point Dredge Material Containment Dike, Stony Point Cove, Delaware River, Salem, NJ. *Associate Archaeologist (2023).* A comprehensive remote-sensing survey was conducted to determine the presence of submerged cultural resources and to record the Emergency Fleet Corporation Ship Breakwater. Rikki conducted archival and historic background research, acted as GIS specialist, and co-authored the report. Client: AKRF, Inc.



Submerged Cultural Resources Assessment Survey, Lakes Joel, Myrtle, and Preston, Osceola County, FL. *Staff Archaeologist (2023).* A comprehensive remote-sensing survey was conducted to assess the presence of submerged cultural resources. Rikki processed remote sensing data and co-authored the report. Client: Terracon Consultants, Inc.

Oregon Inlet Submerged Cultural Resources Survey, Dare County, NC. *Staff Archaeologist (2023).* A comprehensive remote-sensing survey was conducted to determine the presence of submerged cultural resources. Rikki conducted archival and historic background research, acted as GIS specialist, and co-authored the report. Client: USACE, Wilmington District

Submerged Cultural Resources Remote Sensing Survey and Diver Investigation of Proposed Peacock Bridge Replacement, Jackson County, FL. *Staff Archaeologist (2023).* A comprehensive remote-sensing survey with subsequent diver investigations was conducted to determine the presence of submerged cultural resources. Rikki acted as remote sensing technician, archaeological diver, GIS specialist, and authored the report. Client: Florida Department of Transportation

Submerged Archaeological Diver Investigations, Ponce de Leon Inlet, Volusia County, FL. *Staff Archaeologist (2023).* A remote-sensing refinement survey with subsequent diver investigations was conducted to determine the cultural significance of previously identified targets deemed potentially significant. Rikki conducted archival and historic background research, served as a member of the dive team as field director and diver, recorded diver investigation data, acted as GIS specialist, and co-authored the report. Client: USACE, Jacksonville District

Supplemental Geotechnical Investigation Dredged Material Management Facility, Milwaukee, MI. *Staff Archaeologist (2023).* A comprehensive remote-sensing survey with subsequent diver investigations was conducted to assess known submerged cultural resources. Rikki conducted archival and historic background research, acted as GIS specialist, and authored the report. Client: Milwaukee Metropolitan Sewerage District

Swan Creek Feasibility Study and Cultural Resources Survey, Lucas County, OH. *Staff Archaeologist (2023).* A remote sensing survey was conducted to assess the presence of submerged cultural resources. Rikki conducted archival and historic background research, acted as GIS specialist, and authored the report. Client: U.S. EPA, Great Lakes National Program Office

Lower Maumee River Cultural Resources Survey, Lucas County, OH. *Staff Archaeologist (2023).* A remote sensing survey was conducted to assess the presence of submerged cultural resources. Mrs. Milewski conducted archival and historic background research, acted as GIS specialist, and authored the report. Client: U.S. EPA, Great Lakes National Program Office

Submerged Cultural Resources Remote Sensing Survey Mobile River Barge Fleeting Area, Mobile County, AL. *Staff Archaeologist (2022).* A remote sensing survey was conducted to assess the presence of submerged cultural resources. Mrs. Milewski conducted archival and historic background research, acted as remote sensing survey technician and GIS specialist, and authored the report. Client: Parker Towing Company, Inc. and Thompson Engineering, Inc.

Remote Sensing Survey of CPF Area 7, 11, and 12, Contract 2 and Contract 3 Beachfill Area and Borrow Area 8D and 5D in Connections with the Fire Island to Montauk Point Coastal Storm Risk Management Project, Long Island, NY. *Staff Archaeologist (2022).* A remote sensing survey was conducted to assess the presence of submerged and terrestrial cultural resources. Mrs. Milewski conducted archival and historical background research, acted as GIS specialist, and assisted in the completion of the report. Client: USACE, New York District



Underwater Remote Sensing Survey: Artificial Reef Program – Site Evaluations, Hernando Co., FL. *Staff Archaeologist (2022).* Upon the proposal of potential artificial reef sites, a remote sensing survey was conducted to assess the presence of submerged cultural resources. Mrs. Milewski conducted archival and historic background research, acted as GIS specialist, and assisted with the completion of the report. Client: Morgan & Ecklund, Inc. and Water & Air Research, Inc.

Submerged Cultural Resources Survey of the Tampa Bay Channel for the Tampa Bay Navigational Improvement Study, Tamp, FL. *Staff Archaeologist (2022).* A remote sensing survey was conducted to assess the presence of submerged cultural resources. Mrs. Milewski conducted archival and background research, acted as GIS specialist, and assisted with the completion of the report. Client: USACE, Jacksonville District

Bay Raccourci Marsh Creation and Ridge Restoration Terrebonne Parish Cultural Resource Investigations, Houma, LA. *Staff Archaeologist (2022).* A remote sensing survey was conducted to assess the presence of submerged cultural resources. Mrs. Milewski acted as remote sensing survey technician. Client: Coastal Protection and Restoration Authority

Geographic Information System Mapping Product in Connection with the Fire Island to Montauk Point Coastal Storm Risk Management Project, Long Island, NY. *Staff Archaeologist (2022).* A cultural resource inventory and mapping product was created using data from previous investigations. Mrs. Milewski assisted with the compilation of data, historic background research, and the creation of GIS products. Client: USACE, New York District

Submerged Cultural Resources Data Recovery of Site 38JA1178 and Artifact Recovery of Site 9CH1552 Savannah Harbor Expansion Project, Savannah, GA. *Staff Archaeologist (2021).* In preparation for the expansion of the Savannah Harbor, artifacts were recovered and submerged cultural resources were recorded. Mrs. Milewski acted as surface-supplied diving tender. Client: USACE, Savannah District

Submerged Cultural Resource Diver Identification and Literature Review in Connection with the Fire Island to Montauk Point Coastal Storm Risk Management Project, Atlantic Coast of Long Island, NY. *Staff Archaeologist (2021).* A remote sensing refinement survey and diving assessment was conducted to investigate targets identified in previous investigations. Mrs. Milewski acted as remote sensing survey technician and surface-supplied diving tender. Client: USACE, New York District

Brigantine and Townsend Inlet to Hereford Nourishment Projects Expansion of Brigantine Inlet and Townsends Inlet Borrow Areas Submerged Cultural Resources Diver Identification and Evaluation, NJ. *Staff Archaeologist (2021).* A remote sensing refinement survey and diving assessment was conducted to investigate targets identified in previous investigations. Mrs. Milewski acted as remote sensing survey technician and surface-supplied diving tender. Client: USACE, Philadelphia District



MATTHEW LOWE, M.A., RPA

Staff Archaeologist

EDUCATION

M.A., Maritime Studies, East Carolina University, Greenville, NC, 2022

B.A., History, University of Alabama, Tuscaloosa, AL, 2019

YEARS OF PROFESSIONAL EXPERIENCE

3

YEARS WITH FIRM

2

REGISTRATIONS / CERTIFICATIONS

Register of Professional Archaeologists, #5297

Surface Supplied Diving

CPR/First Aid

PROFESSIONAL AFFILIATIONS

Society for Historical Archaeology

Since joining Chronicle Heritage in 2022 Matthew has served as a surface supplied diver for investigations conducted for the USCAE Jacksonville and Philadelphia Districts. He functioned as lead archaeological monitor for beach renourishment efforts at Egmont Key for the USACE Tampa district. His terrestrial work with Chronicle Heritage involved working on a Phase III excavation in Miami, Florida. He is also skilled in the processing of remote sensing data using Magpick and QGIS software. Matthew has previous experience as a Maritime Archaeologist with East Carolina University conducting remote sensing and an underwater investigation on sites in eastern North Carolina. During his time at ECU Matthew was well practiced in the use and operation of Hypack and SonarWiz remote sensing software. Matthew has previous experience with terrestrial Cultural Resource Management work as a Phase I field technician in the Southeastern United States.

SELECT RECENT PROJECT EXPERIENCE

Propel Energy Submerged Cultural Assessment, Long Island Sound, NY. *Associate Maritime Archaeologist (2024).* A cultural resource assessment survey was carried out using side-scan sonar, magnetometer, and subbottom profiler on a cable placement area within Long Island Sound. Matthew acted as an Associate Maritime Archaeologist. He assisted in writing the report, most notably the methodology chapter. Client: WSP USA, Inc.

Hatteras Inlet Submerged Cultural Assessment, Hatteras Inlet, NC. *Lead Geophysical Surveyor (2024).* A cultural resource assessment survey was carried out using side-scan sonar, magnetometer, and subbottom profiler on multiple dredge sites within the Hatteras Inlet. Matthew acted as lead geophysical surveyor and directed the nearshore survey. He assisted in processing acquired side-scan, subbottom, and magnetometer data. Matthew also contributed to writing the historic background, methodology, Investigative findings, and conclusion report chapters. Client: USACE Wilmington District.

Flagler Beach Submerged Cultural Assessment, FL. *Field Director/Remote Sensing Specialist (2024).* A cultural resource assessment survey was carried out using side-scan sonar, magnetometer, and subbottom profiler on a nearshore placement area off Flagler Beach. Matthew acted as lead geophysical surveyor and directed the nearshore survey. He assisted in processing acquired side-scan, subbottom, and magnetometer data. Matthew also contributed to writing the historic background, methodology, Investigative findings, and conclusion report chapters. Client: Olsen and Associates.

NEOM Maritime Phase II, Kingdom of Saudi Arabia. *Geophysical Technician/Archaeological Diver (2023-2024).* An intensive cultural resource assessment was carried out using side-scan sonar, magnetometer, subbottom profiler, and archaeological diver surveys in the Gulf of Aqaba to ascertain the location of potentially significant cultural material for the NEOM project. Matthew



acted as a geophysical surveyor and an archaeological diver. Client: NEOM, Kingdom of Saudi Arabia.

Tampa Bay Harbor expansion Egmont Key Monitor, Tampa Bay, FL. *Lead Archaeological Monitor (2023).* Sand from the Tampa Bay maintenance dredging operation was used as beneficial renourishment for the beach and the cultural resources in the area associated with Fort Dade on Egmont Key. Matthew monitored the cultural resources on the beach throughout the dredging operations and ensured they were minimally impacted during the project. He interfaced with the client regarding previously mapped cultural materials. Client: Great Lakes Dock and Dredge Company.

Longboat Pass Diver Investigations, Longboat Key, FL. *Archaeological Diver (2023).* Cultural resource diving operations were carried out in the intercoastal waterway adjacent to Longboat Key prior to dredging operations. Matthew acted as a surface supplied diver on two distinct targets within the project area. He was also a standby diver and supported fieldwork operations. Client: USACE Jacksonville District.

Brunswick Harbor Submerged Resource Assessment, Brunswick River, GA. *Geophysical Technician (2023).* A submerged cultural resource assessment survey was carried out using side-scan sonar, magnetometer, and subbottom profiler on a nearshore dredge placement area adjacent to Brunswick Harbor and St. Simons Island within the Brunswick River. A diving target refinement survey was concurrently conducted on multiple targets selected for future cultural resource diver investigations. Matthew acted as geophysical technician and online surveyor for both the cultural resource assessment survey and refinement surveys. Client: USACE Jacksonville District.

Longboat Key Submerged Cultural Resource Assessment, Longboat Key, FL. *Lead Geophysical Surveyor (2023).* A cultural resource assessment survey was carried out using side-scan sonar, magnetometer, and subbottom profiler on a nearshore dredge placement area adjacent to Longboat Key. A diving target refinement survey was concurrently conducted on multiple targets selected for future cultural resource diver investigations. Matthew acted as lead geophysical surveyor and directed both the nearshore and refinement surveys. Client: USACE Jacksonville District.

Stony Point Submerged Cultural Resource Assessment, Stony Point, DE. *Geophysical Technician (2023).* A cultural resource assessment survey was carried out using side-scan sonar, magnetometer, and subbottom profiler on a breakwater consisting of Emergency Fleet Corporation (EFC) vessels. Matthew acted as geophysical technician and online surveyor for the duration of the project. Client: AKRF, Inc.

NEOM Maritime Phase I, NEOM, Kingdom of Saudi Arabia. *Geophysical Technician and Archaeological Diver (2023).* An intensive cultural resource assessment was carried out using side-scan sonar, magnetometer, subbottom profiler, and archaeological diver surveys in the northern Red Sea to ascertain the location of potentially significant cultural material for the NEOM project. Matthew acted as a geophysical surveyor, archaeological diver, and geophysical data analyst. Matthew also coordinated with hydrographic surveyor contractors to ensure the best possible quality of contractual data. Client: NEOM, Kingdom of Saudi Arabia.

Tampa Bay Harbor expansion Egmont Key Monitor, Tampa Bay, FL. *Lead Archaeological Monitor (2022).* Sand from the Tampa Bay maintenance dredging operation was used as beneficial renourishment for the beach and the cultural resources in the area associated with Fort Dade on Egmont Key. Matthew monitored the cultural resources on the beach throughout the dredging operations and ensured they were minimally impacted during the project. He interfaced with the



client regarding previously mapped cultural materials and is the author of the final archaeological monitoring report. Client: Great Lakes Dock and Dredge Company.

Fire Island to Montauk Diver Investigation, Long Island, NY. *Staff Maritime Archeologist (2022).* Cultural resource diving operations were carried out at the fire island inlet on submerged cultural resources in preparation for dredging operations. Matthew acted as a surface supplied diver on three distinct targets within the project area. He was also a standby diver and supported fieldwork operations. Client: USACE Philadelphia and Jacksonville Districts.

Tampa Bay Harbor Expansion Project, Tampa Bay, FL. *Staff Maritime Archaeologist (2022).* A cultural resource assessment survey using sidescan sonar, magnetometer, and sub-bottom profiler was carried out prior to maintenance dredging operations of the Tampa channel. Matthew analyzed and interpreted magnetometer data which was then used to create a GIS contour map of the anomalies. He contributed to writing the introduction, investigate findings and conclusion chapters of the report. Client: USACE Tampa District

Odom-Cooper-Flye Farm Archaeological Data Recovery of Six Sites, NC. *Lab Technician (2022).* Matthew organized and labelled cultural resources from the project into appropriate categories for proper storage.

(ECU) Visualizing Port History: An Historical and Archaeological Reconstruction of Washington, North Carolina's Historic Waterfront, Thesis, NC. *Maritime Archaeological student (2019-2022).* Matthew studied Maritime Archaeology at East Carolina University and completed his thesis in the spring of 2022. He used historic maps and economic data combined with Rhino 7 3D modelling software to create a diachronic analysis of the economic boom and bust of a regional American port at the turn of the 20th century. Graduated in May 2022.

(NOAA) Monitor National Marine Sanctuary Expansion Survey, NC. *Maritime Archaeological student/remote sensing technician (2022).* The NOAA Monitor National Marine Sanctuary underwent cultural heritage surveys for a proposed expansion in 2021. Matthew assisted in deploying, maintenance, and observation of sidescan sonar data for 12 wrecks in the proposed expansion area. He was a volunteer for NOAA during the survey.

(ECU) Copper Wreck Report of Investigations NCDENR Permit # 660 PMR-TRR 2020, NC. *Maritime Archaeological student (2020).* The Copper Wreck, an early 20th century wreck at the historic port of Washington, NC was investigated as part of East Carolina University's 2020 fieldschool. Matthew took part in an underwater investigation of the Copper Wreck involving the measuring and detailed mapping of the site. He contributed to the writing of the final report.

Appendix C. SCRAS Research Design

RESEARCH PLAN

SUBMERGED CULTURAL RESOURCES REMOTE SENSING SURVEY
INSIGNIA COLLINSVILLE SUBSTATION CRA
SACRAMENTO RIVER
CONTRA COSTA, SOLANO AND SACRAMENTO COUNTIES, CALIFORNIA

Introduction

PaleoWest's Maritime Division (PaleoWest) presents the following Research Plan to Insignia Environmental (Insignia) to conduct an intensive submerged cultural resources remote sensing survey for a proposed to support a new electrical substation and 230 kV transmission line in the Sacramento River Delta region, roughly midway between Sacramento and San Francisco. The project would require an approximately 4-mile-long stretch of submerged transmission cable under the Sacramento River (Figure 1). Specifically, the area of survey is a 2,000-foot wide 4-mile-long corridor that extends from Pittsburgh, California up the Sacramento River to landfall near Collinsville. Submitted to Insignia to fulfill the Permittee's obligations under Section 106 of the National Historic Preservation Act of 1966, as amended through 1992 (36 CFR Part 800, Protection of Historic Properties); and the Abandoned Shipwreck Act of 1987 (Abandoned Shipwreck Act Guidelines, National Park Service, Federal Register, Vol. 55, No. 3, December 4, 1990 pages 50116-50145), as well as to satisfy the requirements of the State of California, professional services to be provided include the following:

- Coordination with the State of California's State/Underwater Archaeologist.
- Archival Research, Literature review.
- Intensive magnetometer, sidescan sonar and subbottom profiler survey.
- Analysis of remote sensing data.
- Preparation and Submission of Report of Findings chapters.

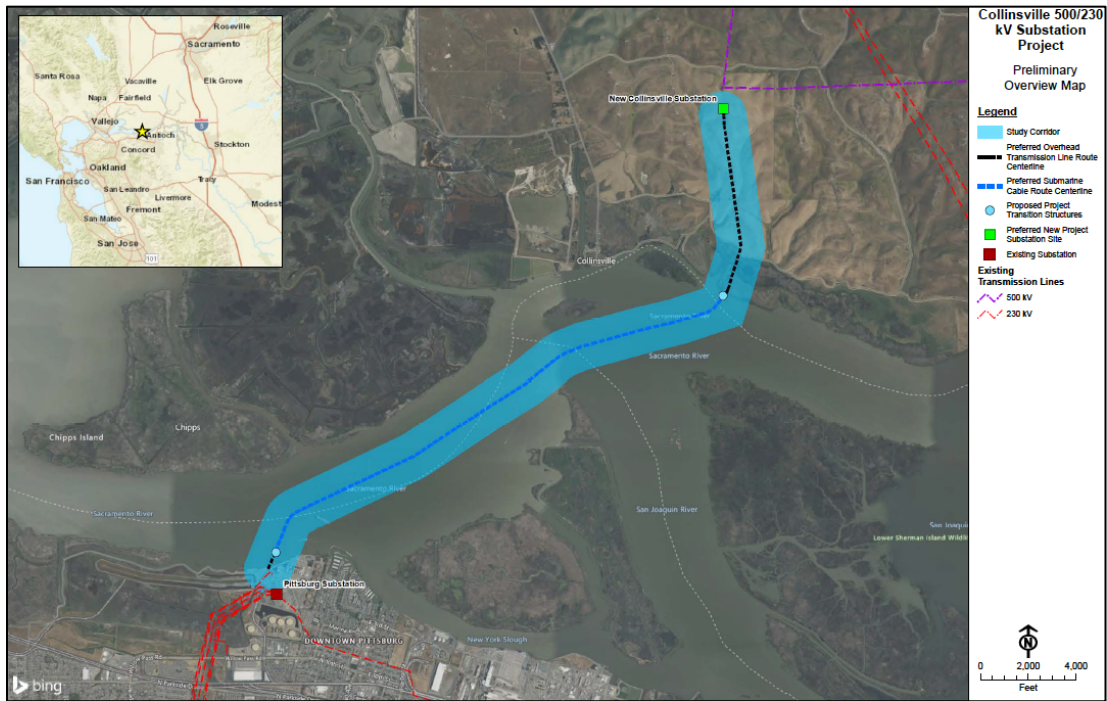


Figure 1. Proposed survey corridor in blue.

PaleoWest's Submerged Cultural Resources Overview:

PaleoWest is well qualified to perform the study as outlined. We are a full-service cultural resources management (CRM) firm with one of the largest professional underwater archaeological staffs in the United States. Comprised of what was the Panamerican Consultants Maritime Division (which was recently purchased by Commonwealth Heritage Group and then subsequently by PaleoWest), our capabilities encompass all levels and types of investigations, and each of our five fully-qualified maritime archaeologists is experienced with every phase of investigation, from archival research, remote sensing survey, data analysis, anomaly testing, data recovery, and full-scale mitigation. With the majority of our projects associated with navigation improvements, island restoration, beach renourishment and storm damage reduction, and flood control, these investigations have been conducted in offshore, coastal, estuarine, and riverine environments throughout the Atlantic, Gulf, and Pacific seaboard of the U.S., the Great Lakes, and the Caribbean, including many in the Sacramento River. This cumulative knowledge of the various submerged environments throughout the United States, and our understanding of and experience with applicable methodological approaches and appropriate technical support, as well as our awareness of the issues, theory, practice, legislation, and laws that guide cultural resource management (i.e., Section 106, Clean Water Act, the Abandoned Shipwreck Act, etc.), ensures our ability to provide succinct submerged cultural resources data for local, state and federal agencies to make informed resource management decisions.

From beach renourishment and storm protection projects on the East Coast, dredge disposal sites and island restoration projects in various bays, borrow investigations offshore the entire eastern seaboard, channel enlargement studies in various harbors (i.e., Mobile, Galveston, Tampa, New York), and flood control/Levee investigations on inland rivers including the Sacramento, PaleoWest (previously Panamerican) has conducted numerous submerged CRM investigations for various local, state and federal agencies including over a dozen U.S. Army Corps of Engineers Districts (i.e., Sacramento, Baltimore, New York, Wilmington, Savannah, New Orleans, Jacksonville, Mobile, Vicksburg, Memphis, Galveston and Tulsa), the Department of Defense

including the U.S. Navy (LANTDV and CHESDIV), the Bureau of Ocean Energy Management (Gulf of Mexico Region), and NOAA, as well as numerous state agencies, and private sector companies.

One of the largest and best equipped in the nation, PaleoWest's maritime archaeological unit has its own in-house remote sensing survey and diving equipment, including state-of-the-art magnetometers, sidescan sonars, subbottom profilers, DGPS positioning and navigation systems, as well as a fleet of vessels. With experience in all types of site environments including rivers, harbors, bays, ship channels, high-impact surf zone, and offshore sites, we are acutely aware of the varying project area site dynamics. During years of successful examinations of underwater cultural resources, we have developed operating and investigative methods uniquely adapted to site conditions and the demands of cultural resources investigations. Furthermore, our in-house GIS capabilities allow all recorded data to be seamlessly and professionally presented. Our GIS deliverables are compatible with National Park Service and DNR GIS systems, which include geo-referenced survey areas with pre and post-plot track lines, labeled magnetic contour maps and sidescan sonar data. Currently PaleoWest utilizes ArcView, HYPACK, or AutoGIS to transfer or digitally capture data into a dual PC and Mac platform. Cartographic and attribute data are fully transferable into Digital Line Graph (DLG) format. PaleoWest utilizes ArcGIS 9.2, PC Surfer, and HYPACK software packages, to perform in-house GIS applications.

PaleoWest has both the experience and the equipment to safely handle all types of remote sensing survey and diving tasks. From small assessments and environments requiring only SCUBA to difficult examinations (i.e., in black water or high-energy zones) requiring surface-supplied air equipment, paramount to any investigation of cultural resources is the question of personal safety. Commonwealth emphasizes the importance of safety in all field endeavors, especially in projects involving boat-handling and diving.

Illustrating PaleoWest's capabilities to perform the study as outlined, and underscoring our experience in the project area and our knowledge of the maritime history and submerged prehistoric issues which factor greatly in the Project Area, PaleoWest personnel have managed, directed, and conducted several surveys and diving investigations upriver from the current proposed project area, including:

- Underwater Investigations For Erosion Inventory Sites, Sacramento River Bank Protection Project, Sacramento, California. Prepared for the US. Army Corps of Engineers, Sacramento District by Panamerican Consultants, Inc., Memphis, Tennessee under contract to North State Resources, California (Lydecker and James 2009).
- Cultural Resources Remote Sensing Survey and Diver Investigation at Selected Target Locations, Sacramento River Bank Protection Project (SRBPP), Sacramento River and Tributaries. Prepared for the US. Army Corps of Engineers, Sacramento District Submitted by Panamerican Consultants, Inc., Memphis, Tennessee under contract to ICF International, Sacramento, California (Lydecker 2010).
- Data Recovery and Mitigation Measures for Adverse Effects to the Clarksburg Ferry (CA-YOL-223H), Sacramento River Bank Protection Project (SRBPP). Prepared for the US. Army Corps of Engineers, Sacramento District by Panamerican Consultants, Inc., Memphis, Tennessee under contract to North State Resources, California (James 2010).

Project Personnel

The remote sensing survey team will consist of two positions: A Remote Sensing Specialist and a Remote Sensing Technician. All of team members are current in Red Cross training for First Aid and Cardio-Pulmonary Resuscitation (CPR), and Emergency Oxygen Administration. Vitae are presented in Appendix I for Key personnel.

Mr. Stephen R. James, Jr. will serve as Project Manager for the duration of this project and will oversee all aspects of the project. Mr. James holds a degree in anthropology from Memphis State University and a master's degree in nautical archaeology from the Institute of Nautical Archaeology, Texas A&M University. RPA (Register of Professional Archaeologists) certified since 1985, and with 25 years of experience in maritime archaeology, Head of Panamerican Consultants, Inc. Maritime Unit for 30 years and now Director of the Maritime Division at PaleoWest/Commonwealth since the recent purchase of Panamerican, Mr. James has directed and managed submerged cultural resource projects of all types throughout the United States, the Caribbean and Pacific including extensive experience in California. Managing Panamerican's Memphis office since 1991, as well as all underwater projects, Mr. James has been Project Manager as Prime on numerous Corps District IDIQs including multiple Vicksburg and Memphis District IDIQs, the Wilmington District Submerged Cultural Resources IDIQ, the Savannah District IDIQ, as well as, our current Mississippi Valley District IDIQ and Jacksonville District BPA. As subcontractor, he has acted as Project Manager and/or Principal Investigator on IDIQs for the Sacramento, Jacksonville and New York District IDIQs, as well as, Mobile, Philadelphia, Savannah, and Wilmington District IDIQs. His experience includes extensive experience for other Districts including Baltimore, Fort Worth, Galveston, Los Angeles, New Orleans, and Seattle Districts, as well as for other federal and state agencies, corporations, and non-profit organizations. Mr. James is thoroughly familiar with federal preservation laws and regulations, preservation compliance, site evaluation, the National Register process, and formulation and implementation of predictive modeling. He is responsible for developing Panamerican's remote sensing survey capabilities which include satellite positioning and navigation systems, terrestrial and marine magnetometers, sidescan sonar systems and subbottom profilers. He is also responsible for developing Panamerican's diving capabilities including development of Dive Operations and Safety Plans, all geared predominantly to Surface Supplied systems for their inherent safety factor. Certified by the Register of Professional Archaeologists since 1985, Mr. James is a graduate of the U.S. Army Corps of Engineers Dive Supervisor and Safety Course, Florida Keys Community College, Key West.

As stated, Mr. James has extensive project experience in California and has directed or managed Phase I remote sensing surveys, Phase II Diver assessments, and Phase III Data recovery projects, many of them associated with California Gold Rush-Era shipwrecks. They include discovery of and investigation of the *Sterling*, *La Grange* and *Niantic*, all in Downtown Sacramento, as well as the remains of several unidentified Gold Rush-Era shipwreck remains. This experience gives him in-depth knowledge on the construction techniques and characteristics, as well as the materials found on these vessel types, some of which were built as whalers and or merchantmen. More recent projects conducted on shipwrecks in California include the Phase III Data Recovery of the Clarksburg Ferry in the Sacramento River below Sacramento. The investigation of the historic Clarksburg Ferry (CA-Yol-223H), a relatively intact example of a Sacramento River Delta ferry, a vessel type that played a significant role in the local and regional landscape well into the twentieth century, was conducted under subcontract to North State Resources, Inc., of Redding, California, and was undertaken to fulfill Section 106 requirements for adverse effects to this historic property from planned erosion repair work at RM 41.9R as part of the Sacramento District, U.S. Army Corps of Engineers' Sacramento River Bank Protection Program.

Mr. William Wilson, who will act as Principal Investigator and Remote Sensing Specialist for this project, has an M.A. in Maritime Archaeology from the University of West Florida, Pensacola, and is a Pensacola resident. RPA Certified and currently lead Maritime Archaeologist with Commonwealth, he recently acted as Principal Investigator/Remote Sensing Specialist on a large survey and diving investigation in the IWW at St. Augustine in which 7 targets were investigated by archaeological divers for a Jacksonville District Corps of Engineer project. Prior to this he directed the archaeological diving investigation of targets offshore New Smyrna Beach for the District as well. He has a wealth of remote sensing survey and diving project experience on the Savannah River for the Savannah District including the recent 2-year long Phase III Recovery of the CSS *Georgia*. He recently directed survey and diving investigations on the Savannah River near Augusta, as well as Jupiter AIWW, both conducted for the Jacksonville District. Closer to the project area, he was Principal Investigator and directed a large remote sensing survey off Fire Island, New York in 2022 for the New York District but through a Philadelphia District contract.

Mr. Justin Milewski will act as Remote Sensing Technician for the project. Currently working on his Master Thesis in Underwater Archaeology from the University of West Florida, since joining Commonwealth in 2021 Mr. Milewski has served as a Remote Sensing technician, as well as GIS technician on cultural resources investigations conducted for the USACE, Jacksonville, New York, Charleston, and Philadelphia Districts. He is skilled in the processing of collected data and in the utilization of our in-house state-of-the-art HYPACK MAX[®] software for remote sensing survey navigation and data acquisition, and Sonar WizMap[®] sidescan mosaicking software. Mr. Milewski has previous experience as a Maritime archaeologist with the University of West Florida conducting remote sensing surveys and underwater excavations on sites throughout the Pensacola, Florida area. Acting as Field Director and Remote Sensing Specialist he just completed a large remote sensing survey offshore South Carolina for the Charleston District. Acting in the same capacity, he is currently conducting a large remote sensing survey project in North Carolina for the Jacksonville District.

Rikki Oeters Milewski is a maritime archaeologist with over four years of experience in cultural resources management (CRM). She currently serves as an associate archaeologist for PaleoWest's Maritime Division. Mrs. Milewski joined PaleoWest in 2021 and completed her M.A. in Maritime Archaeology from the University of West Florida in 2023. She has participated in remote sensing/geophysical and diving investigations for PaleoWest. She has served as GIS specialist, surface-supplied diver, surface-supplied diving supervisor, surface-supplied diver tender, remote sensing survey technician, and archival and historical background researcher on cultural resources investigations conducted for the USACE, Jacksonville, Mobile, New York, Philadelphia, Wilmington, and Savannah districts, the U.S. EPA Great Lakes National Program Office, and various other federal agencies, and private clients. She is skilled in the processing of collected data, the utilization of Sonar WizMap[®] side-scan mosaicking and subbottom profiler analysis software, the use of MagPick magnetometer processing software, various forms of GIS software platforms, archival and historical background research, and report authoring for submerged remote-sensing surveys and archaeological diver investigations. She will act in this capacity for the project.

PROJECT PHASES

Task 1 - State Coordination

As proper protocol dictates, and unless otherwise directed, the project will commence with coordination with the State of California's State/Underwater Archaeologist. The overall project will be discussed as will the proposed technical plan. The State's requirements for submerged cultural resources survey and report deliverables are as follows:

Survey Specifications:

- Preplotted survey lines
- Maximum vessel speed no greater than 5 knots
- Survey line spacing equal or less than 30 meters (100 feet)
- Maximum 1.5 gammas background noise for magnetometer
- Minimum 100% coverage

Report Specifications:

- Discussion of survey methodology and survey events
- Map of the survey area
- Post Plot of survey track lines with annotated event marks
- Contour map of Magnetic anomalies
- Isometric maps of individual anomalies
- Sonar contact images
- Images of any Paleofeatures
- Recommendations for avoidance, assessment, etc. of potentially significant anomalies

Task 2 - Archival and Literature Review

PaleoWest personnel will perform the necessary literature and records check of pertinent sources and collect information on the potential significance of any of the located submerged resources. Emphasis will be placed on the examination of historic documents that may aid in the identification of the submerged resources. A review of the State Master Site Files shall be made to gather data on nearby historic properties in relationship to maritime transportation and commerce, as well as prehistoric sites. Emphasis will be placed on the examination of historic and cartographic data relating to the locations of historic wrecks. Repositories may include, but are not limited to, the following: county records; university and private collections; photography collections; and regional and national archives. Emphasis shall also be placed on documentation related to exploration, colonization, development, agriculture, fishing, industry, trade, transportation, commerce, warfare, and shipbuilding. Appropriate information shall be collected that may provide a correlation between the targets and known shipwrecks.

Additional archival research will be conducted, as necessary, to identify, evaluate, and assess the significance of any recorded potentially significant targets. The contractor shall examine historic background data and build upon that data to further construct and refine a background history of the targets as they relate to the Project Area (i.e., place identifiable targets in appropriate historical context). These contexts can be used as the framework in which to apply the criteria for National Register of Historic Places (NRHP) evaluations.

Emphasis will also be placed on documentation related to the potential for submerged prehistoric sites including evaluating the submerged paleoenvironment, geology, sea level issues, etc. It should be mentioned that PaleoWest has extensive experience using sidescan sonar and subbottom profiling to identify potential paleolandscapes and issues of specifications for identification and avoidance of potential site locations (see Lydecker et al. 2011; Faught and James 2010, 2011).

It should be stated that two wreck symbols are within or adjacent to the proposed survey corridor as shown in Figure 2. At this time it is unknown what these wrecks represent. Archival research should illuminate their sinking time period and possibly type of wreck relative to significance or lack thereof.

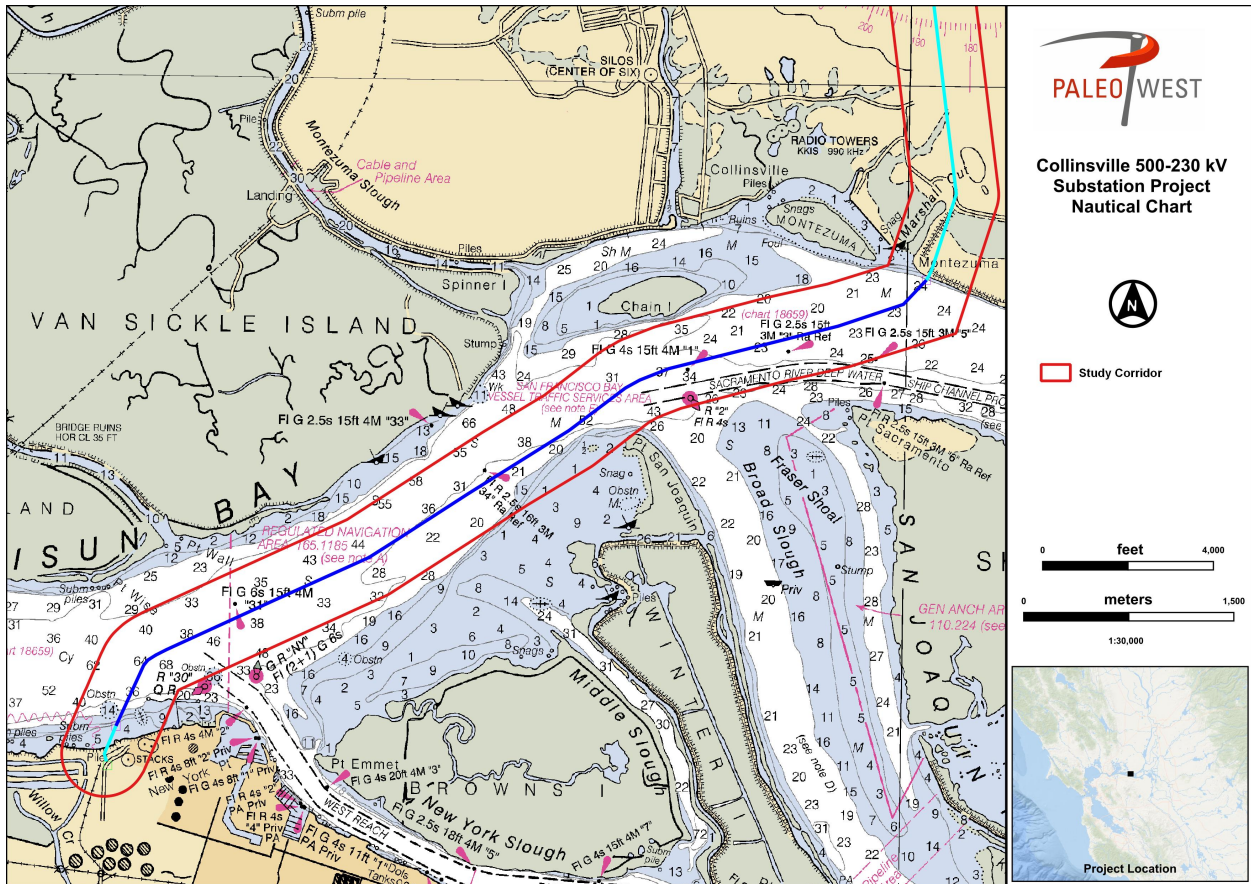


Figure 2. Two wreck symbols are in or immediately adjacent to the survey area. One wreck symbol located at the southern end of the corridor just upriver (to the right) and immediately adjacent to the southern “Proposed Project Transition Structure.” The second wreck symbol is on the extreme northern end just downriver (to the left) and immediately adjacent to the northern “Proposed Project Transition Structure.” It may be in too shallow of water to survey.

Task 3. Remote Sensing Survey, Equipment and Procedures

As in past surveys in California, the project area is to be surveyed with a transect interval that ensures 100% overlapping coverage of the Corridor or Area of Potential Effect (APE) and with transects spaced no more than 30-meters (100-feet) apart. As established by our navigation program this equates to approximately 177 statute survey line miles for the APE. Pre-planned tracklines, also stipulated by state regulations, are presented in Figure 3.



Figure 3. Pre-planned survey lines spaced at 15-meter intervals.

The remote sensing survey of the project areas will comprise a magnetometer, sidescan sonar and subbottom profiler investigation. The remote sensing will, through the use of these instruments and a DGPS navigation system, accurately locate and map potential shipwreck sites as well as locations thought to be conducive to prehistoric habitation (i.e., paleo landforms). Having conducted literally dozens these types of investigations, our methods comply with both Corps of Engineers and State of California survey stipulations. The equipment and methods are discussed below.

Onboard remote-sensing instrumentation will consist of a Marine Magnetics SeaSpy proton precession magnetometer, a Marine Sonic Technology Sea Scan PC side scan sonar system, an Edgetech 424 XSE-500 Shallow Tow X-Star Chirp Subbottom Profiler System, and a Trimble Navigation DSM212H, Integrated 12-channel Global Positioning System (DGPS). All instruments will be towed at a speed of not more than 5 knots. The magnetometer shall have a sensitivity of 1 gamma with 1-second repeatability. The sensor shall employ a depressor or other device capable of maintaining no greater than a six (6) meter tow height above the riverfloor or half the distance to the bottom, whichever is less.

The side-scan sonar shall have 600-1200 kHz capability and will be operated at a scale to assure 200% overlapping coverage from adjacent lanes. At individual targets, the field director may narrow the lane interval in order to define magnetic or sonar characteristics. All systems will be operationally compatible and instrumentation records will be electronically interfaced with an electronic navigation-positioning system offering repositioning accuracy of 1 meter or less. Positioning will be by corrected DGPS. All hard-copy analog or image records will be regularly

annotated with real time, absolute (e.g. state plane/UTM.), and relative position (transect number and distance), and event numbers. State Plane and UTM coordinates, water depth, and reproductions of magnetic targets, acoustic images, and subbottom features will be included in the draft and final reports.

A primary consideration in any remote sensing survey is positioning. Accurate positioning is essential during running of transect survey lines and accurate post processing of collected data. Positioning functions will be accomplished on this project through the use of a Trimble Navigation DSM212H, Integrated 12-channel Global Positioning System (GPS) and Dual-channel MSK Beacon receiver for differential (DGPS) capabilities with sub-meter accuracy or equivalent. Navigation, magnetic data acquisition, and post processing of data will be accomplished with Hypack Max[®], computer software written and developed by Coastal Oceanographics, Inc. specifically for survey applications. Positioning information will be stored on magnetic disk in a Sony Vaio laptop computer employed for various survey software applications, data acquisition and storage. Also developed by Coastal Oceanographics, SonarWhiz.MAP[®], a state-of-the-art program, will be employed for sonar and subbottom data acquisition. It allows real-time mosaicking, and advanced analysis tools such as target tabulation and related target and navigational information.

All work shall be conducted using the California State Plane Coordinate system survey feet and will be presented in NAD83 grid and UTM system coordinates.

SAFETY AND LOGISTICS

Safety will be the paramount concern during the remote sensing project. All PaleoWest personnel scheduled to participate in this research have been qualified in First Aid and CPR by the Red Cross or comparable agency. During the survey, there will be communication with shore in the event of an accident. All PaleoWest personnel are adequately covered by insurance for all activities required under this contract and a COI will be submitted upon award that names the client as co-insured.

Finally, as with all marine activities, a constant monitoring of the weather and environment will be taken to avoid any situation that would be a hazard to navigation or the safe and effective collection of remote sensing data or diving operations. Such contradictions to safe navigation and work could include, but are not limited to: shallows; breaking waves; severe weather; commercial or private craft; unidentified flotsam and jetsam obstructing the survey vessel path; bathers and other individuals in the water; and any other situation that can be considered a hazard to navigation.

Task 4 - Data Analysis

Analysis of collected data will be conducted during and immediately upon completion of the remote sensing survey. When the survey of the Survey Area has been completed, the data for that area for all three instruments will be sent to our Pensacola Maritime office for analysis. In this manner, the schedule will be met.

Employing Hypack in the analysis, all magnetic data collected will be processed into both contour map and tabular format, which will include X/Y coordinates, nanotesla deviation, type, duration, and association with other anomalies or sidescan targets. All magnetic anomalies will be described and assessed as to potential significance by employing signal characteristics (e.g., spatial extent, structural features, etc.). Potentially significant targets are also presented as separate contour maps to allow enhanced visual representation. Magnetic data are presented in magnetic contour maps with trackline format. Sidescan sonar and subbottom targets are presented in tabular form with X/Y data, and located and presented on the contour maps. Images of the sidescan and subbottom targets are also presented.

The evaluation of the potential cultural significance of targets is then conducted, and is dependent on a variety of factors. These include the detected characteristics of the individual targets (e.g., magnetic anomaly strength and duration), association with other magnetic targets on the same or adjacent lines, relationships to observable target sources (i.e., modern debris, channel buoys, or pipeline crossings), as well as correlation to the historic record. Magnetic and sidescan anomalies are evaluated and prioritized based on amplitude or deflection intensity in concert with duration or spatial extent. Targets such as isolated sections of pipe can normally be immediately discarded as nonsignificant. The subbottom record is analyzed for submerged landforms that would be conducive to prehistoric habitation sites, or submerged/buried shell midden features, as well as buried anomalies that could represent shipwreck sites.

Targets that are likely to represent potential historic shipwrecks or other potential submerged resources (i.e., submerged relic landforms) will be identified, and recommendations will be made relative to the potential significance of the target identified. These recommendations will include a motivation as to the significance of the targets. Detailed maps will be produced for any anomaly/target that is recommended for further evaluation, and anomalies will be ranked as to priority for subsequent archaeological evaluation or avoidance.

It must be stated that Data Analysis generally takes place after the completion of the survey and is a somewhat lengthy process. During the survey, the workday is generally long with on-board personnel busy with minding data acquisition needs. Subsequently, analysis cannot be done during the survey. Data analysis is generally a one to one scenario with one day required for analysis of each instrument for each day of survey. Once processed and analyzed, the data must also be compared to the historic record.

Task 5 - REPORT REQUIREMENTS

We will produce Methods, Results, Conclusions and Recommendations Chapters, as well as references. Additionally, we will give you our historical shipwreck research background (for the Sacto River Delta Area) to plug into the Historical Background Chapter produced by the California office.

RESEARCH GUIDELINES

All field, laboratory, and office work to be carried out under this contract will be conducted in accordance with Florida Bureau Historic Preservation Survey Standards, as well as the Standards and Guidelines established in 36 CFR Part 66, Recovery of Scientific, Prehistoric, Historic, and Archaeological Data: Methods, Standards and Reporting Requirements (Federal Register, Vol. 42, No. 19 - Friday, January 18, 1977).

References Cited

Faught, K. Michael, and Stephen R. James, Jr.

2010 *Diver Identification and Archaeological Testing of Ten Geomorphic Targets in Cuts A and B in Tampa Bay and Data Collection from Four Vibracores from Tampa Bay, Hillsborough County, Florida.* Prepared for the U.S. Army Corps of Engineers, Jacksonville District and under contract to G.E.C., Inc., Baton Rouge, Louisiana by Panamerican Consultants, Inc., Memphis, Tennessee.

2011 *Diver Identification and Archaeological Testing: Addendum to Cultural Resources Remote Sensing Survey of Jacksonville Harbor Project GRR2, Duvall County, Florida.* Prepared for the U.S. Army Corps of Engineers, Jacksonville District and under contract to G.E.C., Inc., Baton Rouge, Louisiana by Panamerican Consultants, Inc., Memphis, Tennessee.

Lydecker, Andrew D.W., Michael K. Faught, Michael Murray, and Jelane Wallace

2011 *Sarasota Beach Erosion Control Cultural Resources Survey: Remote Sensing Survey of Four Offshore Borrow Areas, Nearshore and Shoreline Survey, Sarasota County, Florida.* Prepared for the U.S. Army Corps of Engineers, Jacksonville District and under contract to G.E.C., Inc., Baton Rouge, Louisiana by Panamerican Consultants, Memphis, Tennessee.



CHRONICLE™
HERITAGE

For General Inquiries:

T: (886) 563-2536

T: (602) 254-6280

info@chronicleheritage.com



**Attachment C.
NAHC Correspondence**

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd, Suite 100
West Sacramento, CA 95501
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Insignia Collinsville Substation
County: Contra Costa and Solano

USGS Quadrangle

Name: Honker Bay and Antioch
Township: 3N Range: 1E Section(s): Secs 13-15, 22-25

Company/Firm/Agency:

PaleoWest

Contact Person: Katherine Sinsky

Street Address: 2501 Capitol Ave, Ste 200

City: Sacramento Zip: 95816

Phone: (909) 219-1575 Extension: _____

Fax: _____

Email: ksinsky@paleowest.com

Project Description:

The proposed Collinsville 500/230kV Substation Project (Project) is in the Sacramento River Delta region of California. LS Power Grid California, LLC (LSPGC) proposes to construct a new electrical substation and 230 kV transmission line designed to increase reliability and renewable generation. The proposed transmission line extends from Pittsburgh, California, to Collinsville, California, and it includes a combination of aboveground and underwater components.

The Project would require an approximately four-mile-long stretch of submerged transmission cable under the Sacramento River. The exact location of the transmission line is 4.0 miles long with a

Project Location Map is attached

NATIVE AMERICAN HERITAGE COMMISSION

June 1, 2023

Katherine Sinsky
PaleoWest

Via Email to: ksinsky@paleowest.com

Re: Insignia Collinsville Substation Project, Contra Costa and Solano Counties

Dear Ms. Sinsky:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

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

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

If you have any questions or need additional information, please contact me at my email address: Cody.Campagne@nahc.ca.gov.

Sincerely,

Cody Campagne
Cultural Resources Analyst

Attachment



ACTING CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Sara Dutschke
Miwok

COMMISSIONER
Isaac Bojorquez
Ohlone-Costanoan

COMMISSIONER
Buffy McQuillen
Yokayo Pomo, Yuki,
Nomlaki

COMMISSIONER
Wayne Nelson
Luiseño

COMMISSIONER
Stanley Rodriguez
Kumeyaay

COMMISSIONER
Vacant

COMMISSIONER
Vacant

COMMISSIONER
Vacant

EXECUTIVE SECRETARY
Raymond C. Hitchcock
Miwok, Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

**Native American Heritage Commission
Native American Contact List
Solano, Contra Costa Counties
6/1/2023**

Amah Mutsun Tribal Band of Mission San Juan Bautista

Irene Zwierlein, Chairperson
3030 Soda Bay Road
Lakeport, CA, 95453
Phone: (650) 851 - 7489
Fax: (650) 332-1526
amahmutsuntribal@gmail.com
Costanoan

Guidiville Indian Rancheria

Donald Duncan, Chairperson
P.O. Box 339
Talmage, CA, 95481
Phone: (707) 462 - 3682
Fax: (707) 462-9183
admin@guidiville.net
Pomo

Chicken Ranch Rancheria of Me-Wuk Indians

Lloyd Mathiesen, Chairperson
P.O. Box 1159
Jamestown, CA, 95327
Phone: (209) 984 - 9066
Fax: (209) 984-9269
lmathiesen@crtribal.com
Me-Wuk

Indian Canyon Mutsun Band of Costanoan

Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA, 95024
Phone: (831) 637 - 4238
ams@indiancanyon.org
Costanoan

Cachil Dehe Band of Wintun Indians of the Colusa Indian Community

Clifford Mota, Tribal Preservation Liaison
3730 Highway 45
Colusa, CA, 95932
Phone: (530) 458 - 8231
cmota@colusa-nsn.gov
Wintun

Indian Canyon Mutsun Band of Costanoan

Kanyon Sayers-Roods, MLD Contact
1615 Pearson Court
San Jose, CA, 95122
Phone: (408) 673 - 0626
kanyon@kanyonconsulting.com
Costanoan

Cachil Dehe Band of Wintun Indians of the Colusa Indian Community

Daniel Gomez, Chairman
3730 Highway 45
Colusa, CA, 95932
Phone: (530) 458 - 8231
dgomez@colusa-nsn.gov
Wintun

Muwekma Ohlone Indian Tribe of the SF Bay Area

Monica Arellano, Vice Chairwoman
20885 Redwood Road, Suite 232
Castro Valley, CA, 94546
Phone: (408) 205 - 9714
monicavarellano@gmail.com
Costanoan

Cortina Rancheria - Kletsel Dehe Band of Wintun Indians

Charlie Wright, Chairperson
P.O. Box 1630
Williams, CA, 95987
Phone: (530) 473 - 3274
Fax: (530) 473-3301
Wintun

Nashville Enterprise Miwok-Maidu-Nishinam Tribe

Cosme Valdez, Chairperson
P.O. Box 580986
Elk Grove, CA, 95758-0017
Phone: (916) 429 - 8047
Fax: (916) 429-8047
valdezcome@comcast.net
Miwok

North Valley Yokuts Tribe

Timothy Perez,
P.O. Box 717
Linden, CA, 95236
Phone: (209) 662 - 2788
huskanam@gmail.com
Costanoan
Northern Valley
Yokut

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

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Insignia Collinsville Substation Project, Solano, Contra Costa Counties.

**Native American Heritage Commission
Native American Contact List
Solano, Contra Costa Counties
6/1/2023**

North Valley Yokuts Tribe

Katherine Perez, Chairperson
P.O. Box 717
Linden, CA, 95236
Phone: (209) 887 - 3415
canutes@verizon.net

Costanoan
Northern Valley
Yokut

Wilton Rancheria

Steven Hutchason, THPO
9728 Kent Street
Elk Grove, CA, 95624
Phone: (916) 683 - 6000
Fax: (916) 863-6015
shutchason@wiltonrancheria-
nsn.gov

Miwok

The Ohlone Indian Tribe

Desiree Vigil, THPO
1775 Marco Polo Way, Apt. 21
Burlingame, CA, 94010
Phone: (650) 290 - 0245
dirwin0368@yahoo.com

Bay Miwok
Ohlone
Patwin
Plains Miwok

Yocha Dehe Wintun Nation

Anthony Roberts, Chairperson
P.O. Box 18
Brooks, CA, 95606
Phone: (530) 796 - 3400
thpo@yochadehe-nsn.gov

Patwin

The Ohlone Indian Tribe

Andrew Galvan, Chairperson
P.O. Box 3388
Fremont, CA, 94539
Phone: (510) 882 - 0527
Fax: (510) 687-9393
chochenyo@AOL.com

Bay Miwok
Ohlone
Patwin
Plains Miwok

Yocha Dehe Wintun Nation

Yvonne Perkins, THPO, Cultural
Resources Chairman
P.O. Box 18
Brooks, CA, 95606
Phone: (530) 796 - 3400
thpo@yochadehe-nsn.gov

Patwin

**United Auburn Indian
Community of the Auburn
Rancheria**

Gene Whitehouse, Chairperson
10720 Indian Hill Road
Auburn, CA, 95603
Phone: (530) 883 - 2390
Fax: (530) 883-2380
bguth@auburnrancheria.com

Maidu
Miwok

**Confederated Villages of Lisjan
Nation**

Corrina Gould, Chairperson
10926 Edes Avenue
Oakland, CA, 94603
Phone: (510) 575 - 8408
cvltribe@gmail.com

Bay Miwok
Ohlone
Delta Yokut

Wilton Rancheria

Jesus Tarango, Chairperson
9728 Kent Street
Elk Grove, CA, 95624
Phone: (916) 683 - 6000
Fax: (916) 683-6015
jtarango@wiltonrancheria-nsn.gov

Miwok

**Confederated Villages of Lisjan
Nation**

Deja Gould, Language Program
Manager
10926 Edes Ave
Oakland, CA, 94603
Phone: (510) 575 - 8408
cvltribe@gmail.com

Bay Miwok
Ohlone
Delta Yokut

Wilton Rancheria

Dahlton Brown, Director of
Administration
9728 Kent Street
Elk Grove, CA, 95624
Phone: (916) 683 - 6000
dbrown@wiltonrancheria-nsn.gov

Miwok

**Confederated Villages of Lisjan
Nation**

Cheyenne Gould, Tribal Cultural
Resource Manager
10926 Edes Ave
Oakland, CA, 94603
Phone: (510) 575 - 8408
cvltribe@gmail.com

Bay Miwok
Ohlone
Delta Yokut

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This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Insignia Collinsville Substation Project, Solano, Contra Costa Counties.



T: 916.384.0251
F: 602.254.6280
info@paleowest.com

BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Irene Zwierlein, Chairperson
Amah Mutsun Tribal Band of Mission San Juan Bautista
3030 Soda Bay Road
Lakeport, California, 95453

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairperson Zwierlein,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

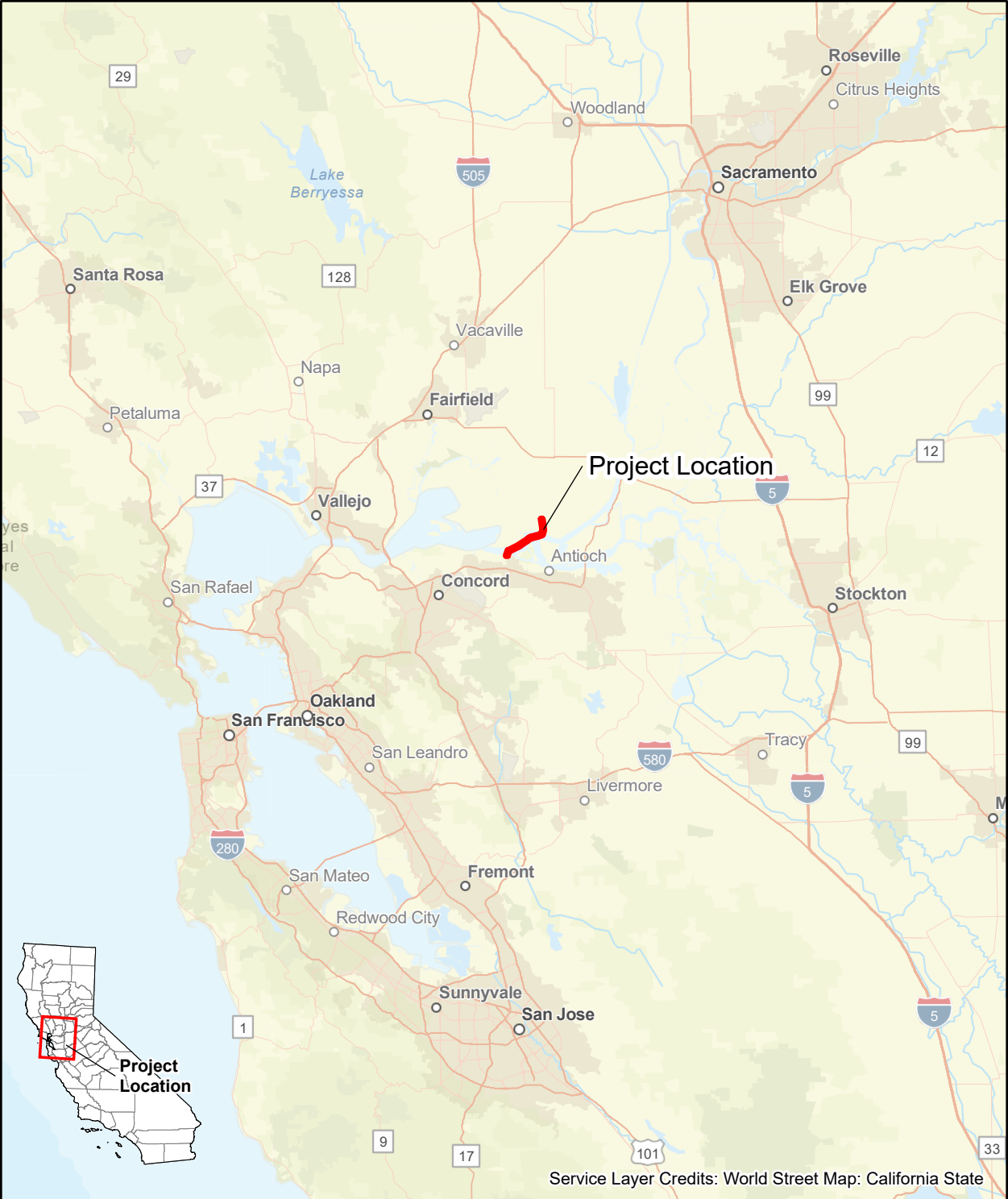
Terrestrial and marine archaeological surveys of the aboveground and submerged portions of the project area will be completed by qualified PaleoWest archaeologists later in the summer. Results of the records search indicate that five sites have been documented within the project area, and seven within a half-mile of the project area. Site types identified in the project area include two historic buildings, a historic structure, a historic site, and a precontact period isolated handstone. Results of the state shipwreck inventory search indicate that 37 wrecks have been documented in the underwater portion of the project area. A search of the Sacred Land File (SLF) by the Native American Heritage Commission (NAHC) was completed and the results were negative.

If you are aware of any Native American cultural resources or traditional cultural properties within or in the vicinity of the Project area shown on the enclosed maps, or if you have any concerns related to the overall Project, please contact me at 760-207-4242 or at my email address below. The information you provide will be used to assess areas of potential significant impact within the Project area, and any information provided will be confidential and not divulged to the public. We appreciate your time and assistance, and we greatly value any information you may provide.

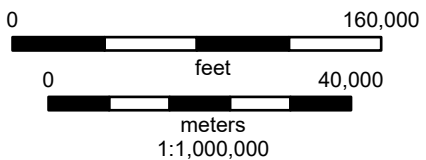
Sincerely,
PALEOWEST

Katherine Sinsky
Senior Archaeologist and Project Manager
760.207.4242
ksinsky@paleowest.com





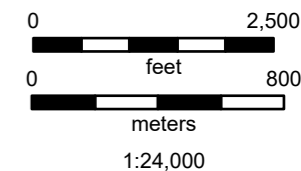
Service Layer Credits: World Street Map: California State



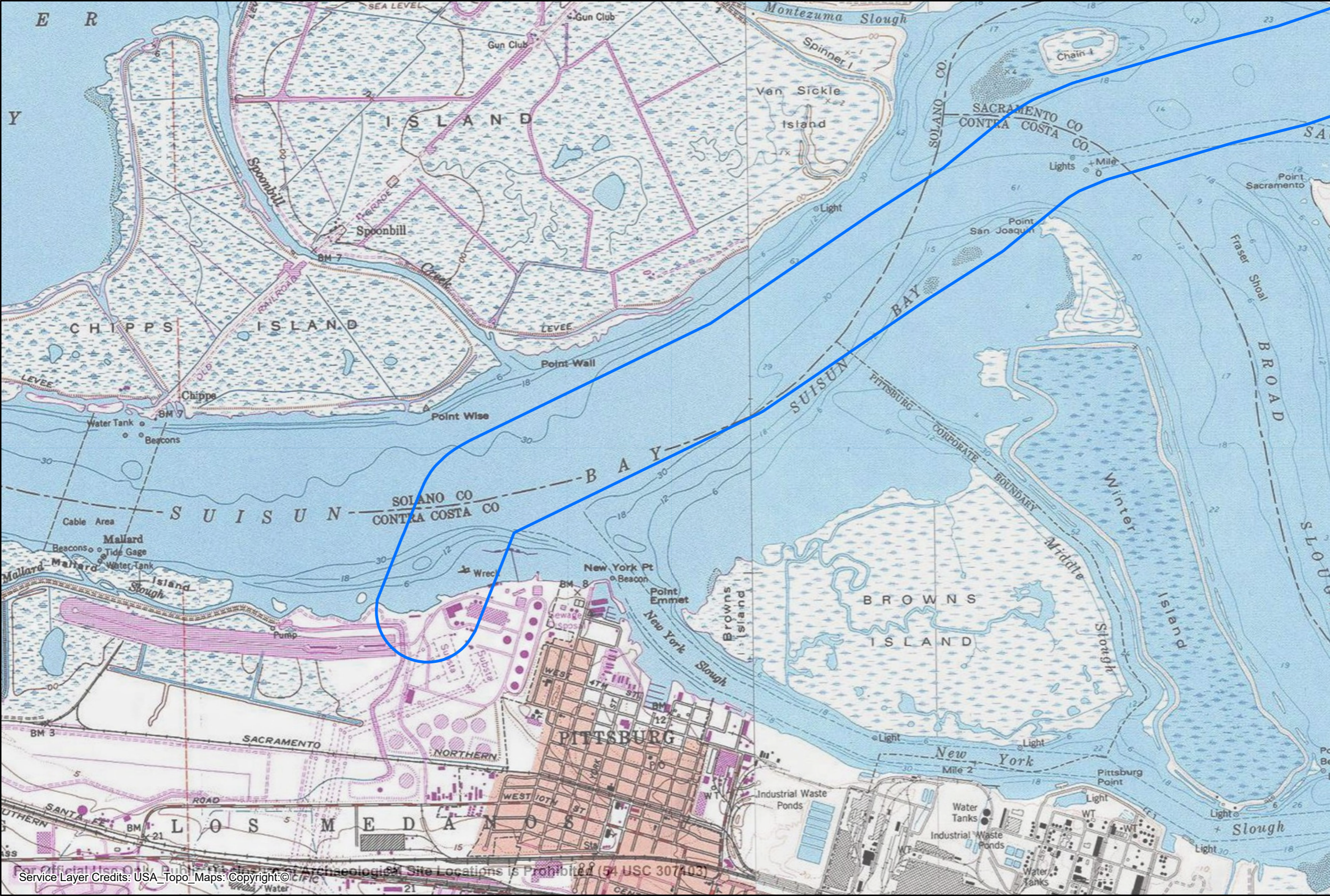
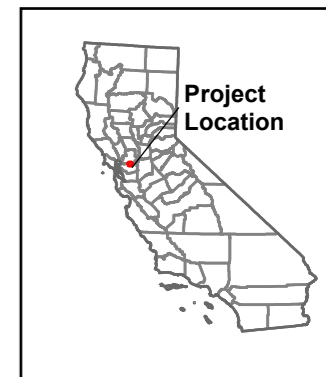
Project Vicinity
 23-0365 Insignia Collinsville
 Substation Survey
 USGS 7.5' Quadrangle:
 Antioch North, Ca (1979),
 Honker Bay, Ca (1981),
 T3N R1E, Secs 23,26;
 Los Medanos Land Grant
 UTM Zone 10, NAD 83

APE Location: Page 1
 23-0365 Insignia Collinsville
 Substation Survey
 USGS 7.5' Quadrangle:
 Honker Bay, Ca (1981)
 Los Medanos Land Grant
 UTM Zone 10, NAD 83

 APE



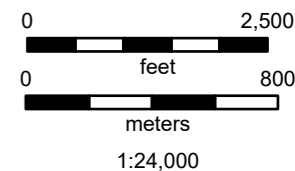
Map Location



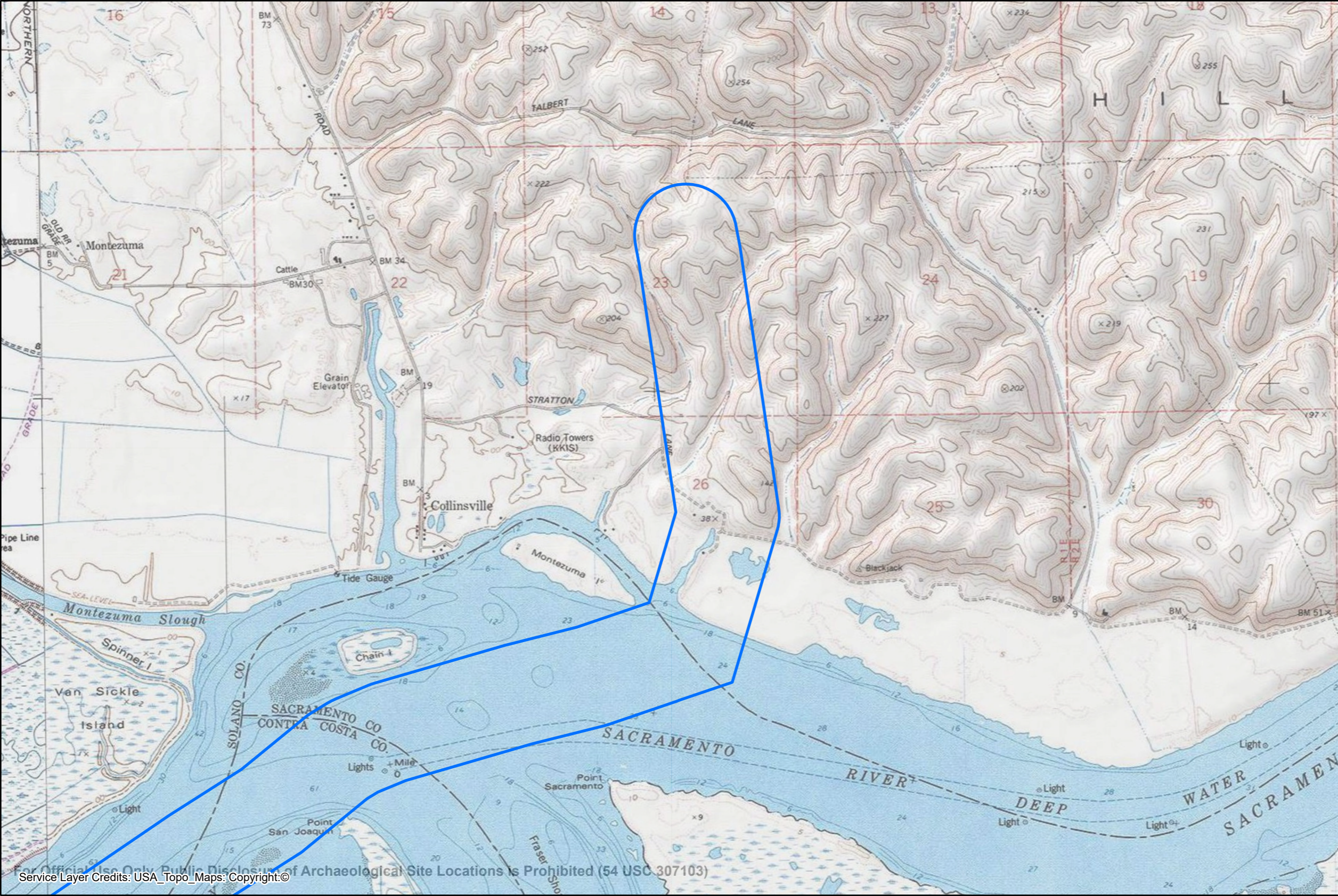


APE Location: Page 2
23-0365 Insignia Collinsville
Substation Survey
USGS 7.5' Quadrangle:
Antioch North, Ca (1979)
T3N R1E, Secs 23,26
UTM Zone 10, NAD 83

 APE



Map Location





**The Amah Mutsun Tribal Band of San Juan Bautista
&
A.M.T.B. Inc.**

Letter of Response

To whom it may concern:

It is our pride and privilege to be of service for any Native American Cultural Resource Monitoring, Consulting and/ or Sensitivity Training you may need or require. We take our Heritage and History seriously and are diligent about preserving as much of it as we can. Construction is a constant in the Bay Area and with that new discoveries are bound to happen. If you choose our services we will gladly guide all personnel through proper procedures to safely protect and preserve: Culture, Heritage, and History.

It is highly recommended, if not previously done, to search through Sacred Lands Files (SLF) and California Historical Resource Information Systems (CHRIS) as well as reaching out to the Native American Heritage Commission (NAHC) In order to determine whether you are working in a Cultural and/ or Historic sensitivity.

If you have received any positive cultural or historic sensitivity within 1 mile of the project area here is A.M.T.B Inc's and Amah Mutsun Tribal Band of San Juan Bautista's recommendations:

- All Crews, Individuals and Personnel who will be moving any earth be Cultural Sensitivity Trained.
- A Qualified California Trained Archaeological Monitor is present during any earth movement.
- A Qualified Native American Monitor is present during any earth movement.

If further Consultation, Monitoring or Sensitivity Training is needed please feel free to contact A.M.T.B. Inc. or Myself Directly.

Sincerely, Irenne Zwiierlein

Irenne Zwiierlein

3030 Soda Bay Road, Lakeport
CA 95453
amtbc21@gmail.com
(650)851-7489



**Amah Mutsun Tribal Band of San Juan Bautista
&
AMTB Inc.**

3030 Soda Bay Road Lakeport, CA 95453

Our rates for 2023

\$250.00 per hour.

4 hours minimum

Cancellations not 48 hours (about 2 days) prior will be charged a 4-hour minimum. There is a round trip mileage charge if canceled after they have traveled to site.

Anything over 8 hours a day is charged as time and a half.

Weekends are charged at time and a half.

Holidays are charged at double time.

For fiscal year (FY) 2023, standard per diem rate of \$329 (\$255 lodging, \$74 M&IE).

M&IE Breakdown FY 2023

| M&IE Total¹ | Continental Breakfast/ Breakfast² | Lunch² | Dinner² | Incidental Expenses | First & Last Day of Travel³ |
|-----------------------------------|---|--------------------------|---------------------------|----------------------------|---|
| \$74.00 | \$17.00 | \$18.00 | \$34.00 | \$5.00 | \$55.50 |

Beginning on July 1st, 2022, the standard mileage rates for the use of a car round trip (also vans, pickups or panel trucks) will be: \$62.50 cents per mile driven for business use or what the current federal standard is at the time.

Our Payment terms are 5 days from date on invoice.

Our Monitors are Members of the Amah Mutsun Tribal Band of Mission San Juan Bautista.

If you have any questions, please feel free to contact the A.M.T.B. Inc. at the below contact information.

Sincerely,

Irenne Zwierlein

Irenne Zwierlein

3030 Soda Bay Rd, Lakeport
CA 95453
amtbin21@gmail.com
(650)851-7489



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F: 602.254.6280
info@paleowest.com

BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Lloyd Mathiesen, Chairperson
Chicken Ranch Rancheria of Me-Wuk Indians
P.O. Box 1159
Jamestown, California, 95327

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairperson Mathiesen,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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If you are aware of any Native American cultural resources or traditional cultural properties within or in the vicinity of the Project area shown on the enclosed maps, or if you have any concerns related to the overall Project, please contact me at 760-207-4242 or at my email address below. The information you provide will be used to assess areas of potential significant impact within the Project area, and any information provided will be confidential and not divulged to the public. We appreciate your time and assistance, and we greatly value any information you may provide.

Sincerely,
PALEOWEST

Katherine Sinsky
Senior Archaeologist and Project Manager
760.207.4242
ksinsky@paleowest.com





T: 916.384.0251
F: 602.254.6280
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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Clifford Mota, Tribal Preservation Liaison,
Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
3730 Highway 45
Colusa, California, 95932

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Tribal Leader Mota,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Daniel Gomez, Chairman
Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
3730 Highway 45
Colusa, California, 95932

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairman Gomez,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Charlie Wright, Chairperson
Cortina Rancheria-Kletsel Dehe Band of Wintun Indians
P.O. Box 1630
Williams, California, 95987

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairperson Wright,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Donald Duncan, Chairperson
Guidiville Indian Rancheria
P.O. Box 339
Talmage, California, 95481

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairperson Duncan,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Ann Marie Sayers, Chairperson
Indian Canyon Mutsun Band of Costanoan
P.O. Box 28
Hollister, California, 95024

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairperson Sayers,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Kanyon Sayers-Roods, MLD Contact
Indian Canyon Mutsun Band of Costanoan
1615 Pearson Court
San Jose, California, 95122

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Kanyon Sayers-Roods,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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Sincerely,
PALEOWEST

A handwritten signature in black ink, appearing to read "K. Sinsky", is written over the company name.

Katherine Sinsky
Senior Archaeologist and Project Manager
760.207.4242
ksinsky@paleowest.com





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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Monica Arellano, Vice Chairperson
Muwekma Ohlone Indian Tribe of the SF Bay Area
20885 Redwood Road, Suite 232
Castro Valley, California, 94546

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Vice Chairperson Arellano,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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Katherine Sinsky
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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Cosme Valdez, Chairperson
Nashville Enterprise Miwok Maidu-Nishinam Tribe
P.O. Box 580986
Elk Grove, California, 95758-0017

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairperson Valdez,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Timothy Perez
North Valley Yokuts Tribe
P.O. Box 717
Linden, California, 95236

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Timothy Perez,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 28, 2023

Katherine Perez, Chairperson
North Valley Yokuts Tribe
P.O. Box 717
Linden, California, 95236

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairperson Perez,

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PALEOWEST

A handwritten signature in black ink, appearing to read "K. Sinsky", written over a light blue horizontal line.

Katherine Sinsky
Senior Archaeologist and Project Manager
760.207.4242
ksinsky@paleowest.com



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F: 602.254.6280
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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Desiree Vigil, THPO
The Ohlone Indian Tribe
1775 Marco Polo Way, Apartment 21
Burlingame, California, 94010

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Desiree Vigil,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Andrew Galvan, Chairperson
The Ohlone Indian Tribe
P.O. Box 3388
Fremont, California, 94539

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairperson Galvan,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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Walnut Creek, CA 94596

June 26, 2023

Gene Whitehouse, Chairperson
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, California, 95603

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairperson Whitehouse,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

Terrestrial and marine archaeological surveys of the aboveground and submerged portions of the project area will be completed by qualified PaleoWest archaeologists later in the summer. Results of the records search indicate that five sites have been documented within the project area, and seven within a half-mile of the project area. Site types identified in the project area include two historic buildings, a historic structure, a historic site, and a precontact period isolated handstone. Results of the state shipwreck inventory search indicate that 37 wrecks have been documented in the underwater portion of the project area. A search of the Sacred Land File (SLF) by the Native American Heritage Commission (NAHC) was completed and the results were negative.

If you are aware of any Native American cultural resources or traditional cultural properties within or in the vicinity of the Project area shown on the enclosed maps, or if you have any concerns related to the overall Project, please contact me at 760-207-4242 or at my email address below. The information you provide will be used to assess areas of potential significant impact within the Project area, and any information provided will be confidential and not divulged to the public. We appreciate your time and assistance, and we greatly value any information you may provide.

Sincerely,
PALEOWEST

Katherine Sinsky
Senior Archaeologist and Project Manager
760.207.4242
ksinsky@paleowest.com





T: 916.384.0251
F: 602.254.6280
info@paleowest.com

BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Jesus Tarango, Chairperson
Wilton Rancheria
9728 Kent Street
Elk Grove, California, 95624

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairperson Tarango,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Dahlton Brown, Director of Administration
Wilton Rancheria
9728 Kent Street,
Elk Grove, California, 95624

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Director Brown,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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Sincerely,
PALEOWEST

A handwritten signature in black ink, appearing to read "K. Sinsky", written over a light blue horizontal line.

Katherine Sinsky
Senior Archaeologist and Project Manager
760.207.4242
ksinsky@paleowest.com



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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Steve Hutchason, THPO
Wilton Rancheria
9728 Kent Street
Elk Grove, California, 95624

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Steve Hutchason,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Anthony Roberts, Chairperson
Yocha Dehe Wintun Nation
P.O. Box 18
Brooks, California, 95606

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairperson Roberts,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Yvonne Perkins, THPO, Cultural Resources Chairman
Yocha Dehe Wintun Nation
P.O. Box 18
Brooks, California, 95606

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairman Perkins,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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Sincerely,
PALEOWEST

Katherine Sinsky
Senior Archaeologist and Project Manager
760.207.4242
ksinsky@paleowest.com





YOCHA DEHE
CULTURAL RESOURCES

August 21, 2023

Paleo West
Attn: Katherine Sinsky, Senior Archaeologist
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

RE: Insignia Collinsville Substation Project YD-07132023-02

Dear Ms. Sinsky:

Thank you for the project notification dated June 26, 2023, regarding cultural information on or near the proposed Insignia Collinsville Substation Project. We appreciate your effort to contact us and wish to respond.

The Cultural Resources Department has reviewed the project and concluded that it is within the aboriginal territories of the Yocha Dehe Wintun Nation. Therefore, we have a cultural interest and authority in the proposed project area and would like to initiate a formal consultation with the lead agency. At the time of consultation, please provide our Cultural Resources Department with a project timeline, detailed project information and the latest cultural study for the proposed project.


To coordinate a date and time for the consultation meeting, please contact:

CRD Administrative Staff
Yocha Dehe Wintun Nation
Office: (530) 796-3400
Email: THPO@yochadehe.gov

Please refer to identification number YD-07132023-02 in any correspondence concerning this project.

Thank you for providing us the opportunity to comment.

Sincerely,

DocuSigned by:

8DD0BD089ED6438...
Tribal Historic Preservation Officer



T: 916.384.0251
F: 602.254.6280
info@paleowest.com

BAY AREA, CALIFORNIA
1870 Olympic Blvd, Suite 100
Walnut Creek, CA 94596

June 26, 2023

Corrina Gould, Chairperson
Confederated Villages of Lisjan Nation
10926 Edes Avenue
Oakland, California 94603

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Chairperson Gould,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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1870 Olympic Blvd, Suite 100
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June 26, 2023

Deja Gould, Language Program Manager
Confederated Villages of Lisjan Nation
10926 Edes Avenue
Oakland, California, 94603

RE: Native American Outreach for the Insignia Collinsville Substation Project, Contra Costa and Solano Counties, California

Dear Deja Gould,

PaleoWest, LLC (PaleoWest) is seeking any information you may have regarding Native American cultural resources in the vicinity of the 500/230 kV Collinsville Substation Project, which begins at the PG&E Pittsburg Substation in Contra Costa County, travels north for four miles across the Sacramento River, and ends at the proposed Collinsville substation site on the north bank of the river in Solano County. The project is depicted on the USGS *Honker Bay, CA* and *Antioch, CA*, topographic quadrangles, and on the enclosed maps. The project is subject to the California Environmental Quality Act (CEQA), with involvement from the U.S. Army Corps of Engineers (USACE) and California Public Utilities Commission (CPUC).

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