At the request of the Historic Preservation Commission, sensitive cultural resources information has been redacted

April 16, 2009

Milford W. Donaldson
c/o William Soule
State Historic Preservation Officer
California State Department of Parks and Recreation
Post Office Box 942896
Sacramento, California 94296

Subject: Identification, Evaluation and Determination of Adverse Effects – Seismic Upgrade of Bay Division Pipeline Nos. 3 and 4 at Hayward Fault Project, Fremont, Alameda County California

Dear Mr. Donaldson:

The SFPUC has requested authorization to construct the Seismic Upgrade of Bay Division Pipeline Nos. 3 and 4 at Hayward Fault Project, a component of the San Francisco Public Utilities Commission (SFPUC) Water System Improvement Program. The Corps of Engineers, San Francisco District (USACE), is processing a permit application pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S. Code 403), and Section 404 of the Clean Water Act (33 CFR Part 325 and 330) for the proposed BDPL Nos. 3 and 4 Project. USACE has identified these permitting actions as an undertaking pursuant to the National Historic Preservation Act (36 CFR 800). The SFPUC has taken into account the effects of the proposed project on historic properties.

ESA+Orion, a joint venture, has been authorized to provide this letter at the request of the USACE. At this time we are requesting your review and comment on our Area of Potential Effects (APE), Identification and Evaluation of Historic Properties, and Assessment of Adverse Effects.

Project Location and Description

BDPL Nos. 3 and 4 cross the Hayward fault in the city of Fremont, Alameda County as shown on the USGS Fremont 7.5-minute topographic quadrangle (Figures 1 and 2). The sections of the pipeline to be upgraded are located within the 80-foot SFPUC right-of-way between the existing South and North Shutoff Stations near the intersection of Interstate 680 (I-680) and Mission Boulevard (Figure 3). Within the project area, the pipelines cross I-680, three I-680 on-ramps, Mission Boulevard, Agua Caliente Creek (contained within a concrete culvert), and Agua Fria

Creek (a creek that crosses the pipeline right-of-way and flows within its natural bed within the right-of-way). The SFPUC right-of-way traverses residential areas on both the north and south ends.

The proposed project includes installation of approximately 2,360 feet of 72-to 78-inch diameter welded steel pipe (BDPL No. 3X) directly adjacent to the existing 78-inch diameter BDPL No. 3 between the North and South Shutoff Stations. In addition, minor upgrades to the existing BDPL No. 4 will be implemented to seismically strengthen the pipeline where it crosses two traces of the Hayward fault, and prevent damage to the new BDPL No. 3X should BDPL No. 4 fail. The new BDPL No. 3X would parallel the two existing pipelines at a depth comparable to or below the existing BDPL Nos. 3 and 4, and all facilities with the exception of access manholes would be constructed below ground. All improvements would be constructed within the 80-foot SFPUC right-of-way between the existing South and North Shutoff Stations. For planning purposes, the project area has been divided into the eight construction zones indicated on Figure 3, and includes four staging areas where grading, but no excavation would occur.

Installation of the new BDPL No. 3X would require construction activities along the entire 2,360-foot segment of pipeline to be replaced. The method of construction and dimensions of planned excavation in each zone are summarized in Table 1. Construction methods would include pipeline installation within existing corrugated-metal pipes (under I-680), open-trench excavation, and cut-and-cover excavation. Jack-and-bore or open-trench excavation could be used to cross Agua Fria Creek in Construction Zone 1, and jack and bore may be used under I-680 and the southbound on-ramp (Zones 2 and 4) if the corrugated-metal pipes are not sound enough. In addition, several utilities that cross the proposed BDPL No. 3X alignment would require abandonment, relocation, or protection during construction. Improvements to BDPL No. 4 would be made in the vicinity of an existing slip-joint valve in Zone 5 and in Zone 8. In all zones, excavation sidewalls would be shored or sloped for safety and protection of adjacent structures, including the existing BDPL Nos. 3 and 4.

Area of Potential Effects

The APE for cultural resources includes all the areas, surface and subsurface, that could experience ground disturbance as a result of proposed project activities including locations of pipeline construction as well as locations of affected utilities, temporary bridges, and staging areas. For the proposed project, the horizontal APE includes the entire 80-foot-wide SFPUC right-of-way and the four staging areas shown on Figure 3. The vertical APE corresponds to the depth of excavation in each construction zone, outlined above in Table 1.

Identification Efforts and Evaluation

To determine the presence or absence of potential historic properties within the APE a records search and a pedestrian survey were conducted. The records search was conducted by the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University, Rohnert Park, California (NWIC File No. 07-1065). The records search included a 1.6-kilometer (one-mile) buffer around the project construction limits.

TABLE 1
COMPONENTS OF THE SEISMIC UPGRADE OF BDPL NOS. 3 AND 4 AT HAYWARD FAULT PROJECT

Construction Zone	Construction Method	Length	Width	Depth
BDPL No. 3 Improvements				
Zone 1 (Point of Connection)	Install wye and valves on BDPL No. 3X	40 ft.	30 ft.	25 ft.
Zone 1 – Option A: Jack-and-bore	Creek crossing by jack-and-bore	125 ft.	30 ft.	30 ft.
		40 ft.	20 ft.	30 ft.
Zone 1 – Option B: Open-cut excavation	Creek crossing by open-cut excavation	125 ft.	10 ft.	30 ft.
Zone 2 – Option A: Use existing CMP	Place BDPL No. 3X in existing CMP3	Approx. 75 ft.	8 ft.	13 ft.
Zone 2 – Option B: Jack-and-bore	Jack-and-bore beneath I-680 on-ramp (one pit)	125 ft.	30 ft.	25 ft.
Zone 3	Place BDPL No. 3X in open cut excavation	60 ft.	8 ft.	35 ft.
Zone 4 – Option A: Use existing CMP	Place BDPL No. 3X in existing CMP2	No excavation required. Access to the corrugated metal pipeline would be through the open cut excavation in Zones 3 and 5.		
Zone 4 – Option B: Jack-and-bore	Jack-and-bore beneath I-680 (two pits)	125 ft.	30 ft.	30 ft.
		40 ft.	20 ft.	30 ft.
Zone 5	Place BDPL No. 3X in open cut excavation	200 ft.	8 ft.	18 ft.
Zone 6	Install and remove temporary bridge at northbound loop on-ramp	No excavation required. Bridge would be supported on installed piles.		
	Place BDPL No. 3X in open cut excavation	40 ft.	8 ft.	15 ft.
Zone 7	Install and remove temporary bridges at Mission Boulevard and northbound diamond on-ramp	No excavation required. Bridge would be supported on installed piles.		
	Construct articulated vault beneath Mission Boulevard	400 ft.	30 ft.	28 ft.
Zone 8	Place BDPL No. 3X in open cut excavation	980 ft.	8 ft.	27 ft.
Zone 8 (Point of Connection)	Install wye and valves on BDPL No. 3X	40 ft.	30 ft.	21 ft.
BDPL No. 4 Improvements				
Zone 6	Encase BDPL No. 4 on either side of existing slip-joint vault at Trace B	120 ft.	35 ft.	20 ft.
Zone 8	Sliplining or replacement of BDPL No. 4 at Trace C	400 ft.	35 ft.	15 ft.

Fifty-seven previous surveys, 12 recorded cultural resource sites, and one isolate were identified within the search radius (TetraTech, 2008). One prehistoric archaeological site, **CA-ALA-576** was found to be within the APE (Figure 3). The currently mapped site boundary places the site [redacted] The deposit is described as a deeply stratified site, with an extensive midden, numerous burials, rock ovens, and a variety of other features and artifacts (King, 1968; Gmoser et al., 1999). Previously, the site had been identified as two separate deposits, CA-ALA-342 on [redacted] (Conger and Burris, 1966) and CA-ALA-509 [redacted] (Cartier, 1989).

CA-ALA-576 was first excavated in 1968 (King, 1968). Numerous human burials, rock cooking features, and a wide variety of artifacts were uncovered. The original site maps indicated that the primary midden deposit was located [redacted] Additional investigations by Galvan and Thompson (n.d.; as mentioned in Rosenthal, 2006) focused on deposits within a housing development located [redacted] (resulting in the separate designation). Several burials were also encountered as well as rock features and an additional variety of artifacts.

Investigations in 1999 showed that the site was one large deposit, and it was assigned a new trinomial and primary number by the NWIC. Testing demonstrated that cultural materials are located [redacted] (Gmoser, 1999; Gmoser et al., 1999). The site boundaries were enlarged to include the work areas of both King and Galvan and Thompson as well as extended southwest to I-680. Over 135 cubic meters of backhoe trenches were excavated in the 1999 investigation with approximately 41 cubic meters within the site boundaries. Two stratigraphic components, representing two primary periods of occupation were identified; one dating to the early Middle Period (ca. 1900–1800 years before present) and the other to the Late Period (ca. 1300–600 years before present). The project produced a wide range of flaked and ground stone tools, abundant floral and faunal remains, cooking features, and human burials.

Additional testing in 2006 adjusted [redacted] (Rosenthal, 2006). Subsurface testing by Pacific Legacy on the [redacted] (Price and Holson, 1999).

Gmoser, et al. (1999:III-2) recommended the site as eligible to the National Register under Criterion d, because it has yielded or may be likely to yield additional information important to prehistory.

The records search also revealed that one additional archaeological resource has been recorded within 0.8 kilometers (½-mile) of the APE consisting of an isolate (CA-ALA-ISO-13) that was

found [redacted] (Bryne, 1992). [redacted] **CA-ALA-576** and there are notations in site records, surveys, and subsurface testing programs (Banet et al., 1991:10; Cartier, 1989; Rosenthal, 2006:5) of eroding materials observed in the [redacted] within the boundaries of **CA-ALA-576**; thus, the assumption is that this isolated Franciscan chert scraper originated from **CA-ALA-576** and [redacted]

Other cultural resources located within 1.6 kilometers (one mile) of the APE include three prehistoric habitation sites (P-01-000004, P-01-000013, and P-01-000153), one bedrock milling station (P-01-000141), a burial locality (P-01-002120), two historic-period railroad alignments (P-01-001783 and P-01-010625), and two historic-period architectural resources (C-921 and P-01-001624).

In addition to the records search, the SFPUC also contacted the California Native American Heritage Commission (NAHC) with a request for a search of its sacred lands file covering the APE. A list of local Native Americans who may have an interest or knowledge of the project area was also requested. There is no federally recognized tribe associated with the area. The NAHC did not have any sacred sites recorded within the APE, however, they recommended that eight Native Americans with lineal ties to the area be contacted to identify any resources not on file with the NAHC. The SFPUC initiated these consultations via letters mailed on April 1, 2008. As of this writing; no response has been received.

The pedestrian archaeological field survey of the APE was undertaken specifically for this project by Tetra Tech, Inc. archaeologists on January 16, 2008 (Tetra Tech, Inc., 2008) with additional survey by an ESA archaeologist on March 19, 2008. A portion of the project area to the east of Staging Area 3 is on private property, although the area was open to observation during a field meeting with SFPUC staff; this area was densely landscaped with little ground surface visibility. The survey of Staging Area 4 was conducted in 15-meter (50-foot) transects with surface scrapes due to the dense vegetation encountered. Digital photograph overviews were taken of the surveyed area. [redacted] All other areas have been extensively disturbed by pipeline installation, freeway construction, culvert construction, or [redacted]

Although potions of site **ALA-576** are disturbed, the USACE believes that due to the large subsurface component, depth of deposits, numerous features present, and previously discovered burials, site **ALA-576**, in accordance with the National Register of Historic Place Guidelines 36 CFR 60, qualifies as significant under Criterion d.

Assessment of Effects

Construction of the new BDPL No. 3X and improvements to BDPL No. 4 will directly impact site ALA-576 due to excavation required to install pipeline facilities. Excavation could destroy portions of the site including features that may contribute to site ALA-576's qualities of significance. The USACE has determined that the impact to the site constitutes an adverse effect.

Previous studies have determined there is a high probability that site boundaries also extend into other portions of the project area. Avoidance is not feasible. The proposed replacement route maximizes the use of existing utility corridors and rights-of-way, while bypassing residential communities and sensitive environmental areas to the extent possible. In addition, there is an imminent need to upgrade these facilities to withstand seismic disturbance.

Resolution of Adverse Effects and Continuing Consultation

The USACE is requesting your review and comment regarding our APE, identification efforts, and evaluation of historic properties. As described above, the USACE has determined that the APE for the project consists of all construction components related to the seismic upgrade of BDPL Nos. 3 and 4. Although the pedestrian survey of the project area did not reveal archaeological material, much of the area has been previously disturbed and the surface is not visible. The records search for the project revealed that 12 potential cultural resources and one isolate have been recorded within a mile of the APE. It was also determined that one eligible prehistoric property (**CA-ALA-567)** is situated within the APE. The site has been evaluated in accordance with Section 106 of the NHPA and under criterion D of 36 CFR 60. There is no federally recognized Native American Tribe affiliated with the area, however the USACE and SFPUC have consulted with groups identified by the NAHC as having ancestral ties to the area. The USACE has determined that the proposed undertaking may result in an adverse effect to site **CA-ALA-576**. In accordance with Section 106 (36 CFR 800), in an effort to resolve the adverse effects, a Memorandum of Agreement (MOA) and an Historic Properties Treatment Plan (HPTP) will be prepared and submitted to your office for review. We will continue consultation with you, interested Native American tribes, and the Advisory Council on Historic Preservation regarding the MOA and resolution of adverse effects. If you have any questions regarding this project please contact Kathleen Ungvarsky, Archaeologist, at (415) 503-6842, or email, kathleen.ungvarsky@usace.army.mil or Mitch Marken at (310) 971-1500, or email at mmarken@esassoc.com. Our return address for correspondence is 225 Bush St., Suite 1700, San Francisco, California 94104.

Sincerely,

Mitch Marken, Ph.D.
Practice Leader
Cultural Resources Director
ESA, Inc.
Cc: K. Ungvarsky, Corps
B. Smith, Corps
Y. Zhang, SFPUC

Enc: Figures 1 through 3
ESA+Orion 2009
S-22501_Gmoser 1999 (Included in ESA+Orion 2009)

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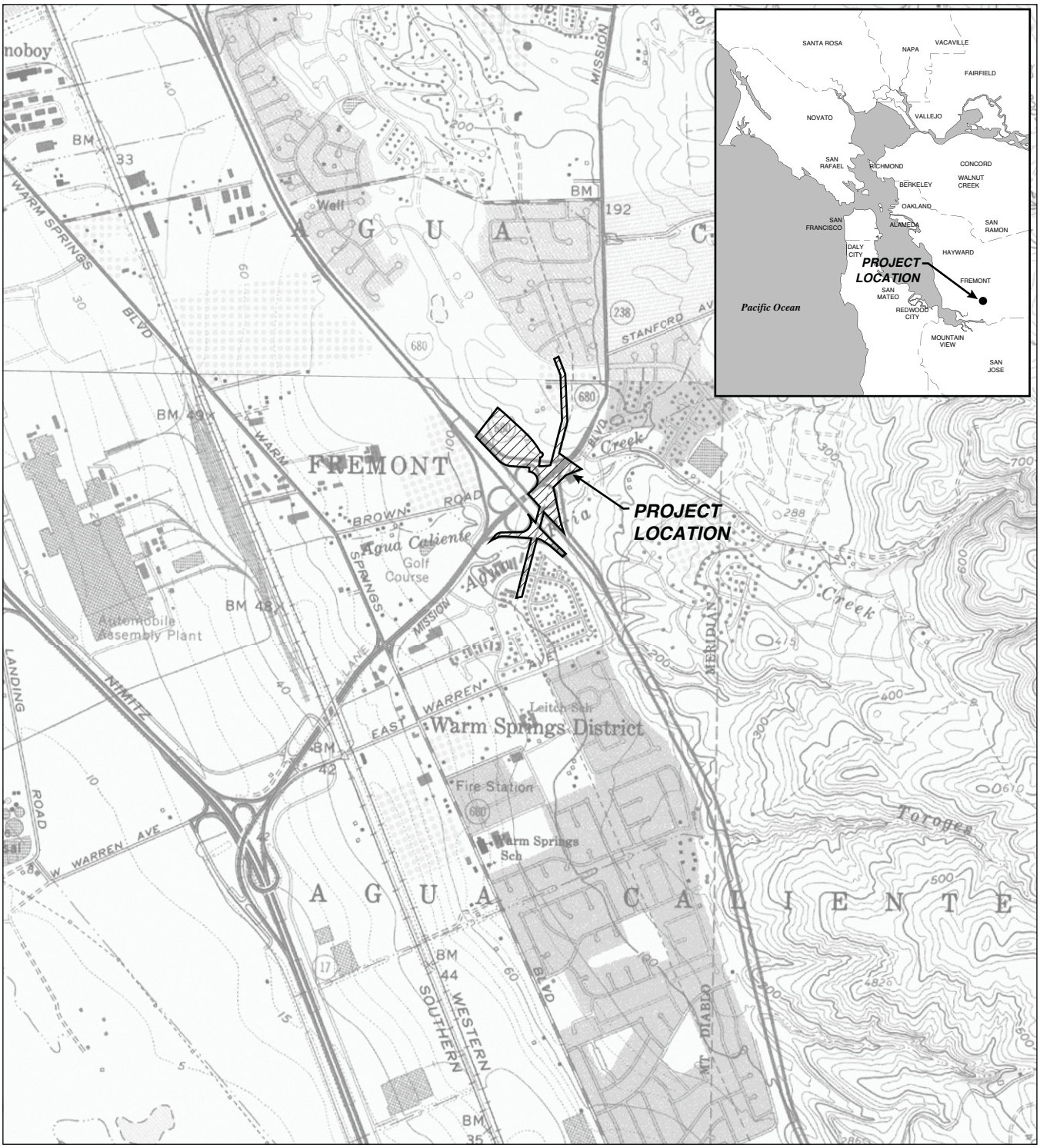
Tetra Tech, Inc. *Survey of Existing Historical Architectural and Archaeological Resources - Seismic Upgrade of Bay Division Pipeline Nos. 3 and 4 at Hayward Fault Project.* Prepared for the San Francisco Public Utilities Commission. April, 2008.



SOURCE: ESA

Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault . 206166.06

Figure 1
Project Location

0 1000
Feet

SOURCE: GlobeXplorer

Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault . 206166.06

Figure 2
Project Location

Sensitive Culture Resources Information
REDACTED

Area of Potential Effects
Archaeological Site CA-ALA-576
Existing BDPL No. 3
Existing BDPL No. 4
SFPUC Right of Way
New BDPL No. 3X
Staging Area 1
Staging Area 2
Staging Area 3
Staging Area 4
Seep and Potential Other Waters of the United States

0 400
Feet

SOURCE: GlobeXplorer; ESA, 2008; URS, 2008a
Note: the entire project area may be used for construction staging

Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault . 206166.06

Figure 3
Archaeological Area of Potential Effects

DRAFT

SEISMIC UPGRADE OF BAY DIVISION PIPELINE NOS. 3 AND 4 AT HAYWARD FAULT PROJECT

FREMONT, ALAMEDA COUNTY, CALIFORNIA

Historic Context and Archaeological Survey Report

Prepared for

San Francisco
Planning Department,
Major Environmental
Analysis

and

San Francisco Public
Utilities Commission

April 2009

Prepared by

ESA+Orion

ESA+ORION
a joint venture

STATEMENT OF CONFIDENTIALITY

This report contains confidential cultural resources location information; report distribution should be restricted to those with a need to know. Cultural resources are nonrenewable, and their scientific, cultural, and aesthetic values can be significantly impaired by disturbance. To deter vandalism, artifact hunting, and other activities that can damage cultural resources, the locations of cultural resources should be kept confidential. The legal authority to restrict cultural resources information is in California Government Code Section 6254.10 and the National Historic Preservation Act of 1966, as amended, Section 304.

SUMMARY OF FINDINGS

This report was prepared for the San Francisco Planning Department, Office of Major Environmental Analysis (MEA), and the San Francisco Public Utilities Commission (SFPUC) and documents the archaeological survey for the Seismic Upgrade of Bay Division Pipeline (BDPL) Nos. 3 and 4 at Hayward Fault Project. The proposed project is a component of the SFPUC's Water System Improvement Program (WSIP). The BDPL Nos. 3 and 4 carry water from the Irvington Tunnel in Fremont to customers in the East Bay, South Bay, and Peninsula through turnouts along the pipelines. These pipelines cross the Hayward fault in Fremont. Without the proposed improvements, a large earthquake on the Hayward fault could rupture both pipelines at the project location, causing substantial damage to surrounding features, localized flooding, as well as loss of water supply to the San Francisco Bay Area.

Because implementation of the proposed project includes obtaining a federal Section 404 permit from the U.S. Army Corps of Engineers, the project is required to comply with federal environmental laws as well as the California Environmental Quality Act (CEQA). Tasks completed for this study include a records search at the Northwest Information Center of the California Historical Resources Information System, development of a historic context, a field survey, and contact with Native American organizations/individuals.

The Area of Potential Effects (APE) for archaeological resources is the area, surface and subsurface, that could experience ground disturbance as a result of proposed project activities including locations of pipeline construction and maintenance as well as locations of affected utilities, temporary bridges, and staging areas. The horizontal APE includes the entire 80-ft.-wide SFPUC right-of-way and four staging areas. The vertical APE corresponds to the individual ground-disturbing project components, with a maximum depth of 35 feet below ground surface.

One archaeological site CA-ALA-576 has been previously identified within the APE. Testing demonstrated that cultural materials are located [redacted] extends to a depth of three meters (9.8 feet) or more below present-day ground surface (Gmoser, 1999; Gmoser et al., 1999). Much of the site is buried beneath the imported artificial fill [redacted] Gmoser et al. (1999:III-2) recommended the site as eligible to the National Register under criterion d, because it has yielded or may be likely to yield additional information important to prehistory. Cultural constituents include an extensive midden, numerous burials, rock ovens, and a variety of other features and artifacts with two distinct stratigraphic components, representing two primary periods of occupation; one dating to the early Middle Period (ca. 1900–1800 years BP) and the other to the Late Period (ca. 1300–600 years BP).

The site is buried beneath artificial fill and pavement. No surface manifestations of the site were recorded during the current surface survey and no additional archaeological resources were recorded.

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I. Introduction

This Historic Context and Archaeological Survey Report (HCASR) was prepared for the San Francisco Planning Department, Office of Major Environmental Analysis (MEA) and the San Francisco Public Utilities Commission (SFPUC). The HCASR documents the archaeological inventory for the Bay Division Pipeline (BDPL) Nos. 3 and 4 Project. The proposed project is a component of the SFPUC's Water System Improvement Program (WSIP). The BDPL Nos. 3 and 4 carry water from the Irvington Tunnel in Fremont to customers in the East Bay, South Bay, and Peninsula through turnouts along the pipelines. These pipelines cross the Hayward fault in Fremont. Without the proposed improvements, a large earthquake on the Hayward fault could rupture both pipelines at the project location, causing substantial damage to surrounding features, localized flooding, as well as loss of water supply to the San Francisco Bay Area.

BDPL Nos. 3 and 4 cross the Hayward fault in the city of Fremont, Alameda County as shown on the USGS Fremont 7.5-minute topographic quadrangle (see Figures 1 and 2 for the project location). The sections of the pipeline to be upgraded are located within the 80-foot SFPUC right-of-way between the existing South and North Shutoff Stations near the intersection of Interstate 680 (I-680) and Mission Boulevard. Within the project area, the pipelines cross I-680, three I-680 on-ramps, Mission Boulevard, Agua Caliente Creek (contained within a concrete culvert), and Agua Fria Creek. The SFPUC right-of-way traverses residential areas on both the north and south ends.

Because implementation of the proposed project includes a Section 404 permit from the U.S. Army Corps of Engineers (Corps), the project is required to comply with federal environmental laws, specifically Section 106, as amended, of the National Historic Preservation Act (NHPA; see Regulatory Context) as well as the California Environmental Quality Act (CEQA). The purpose of this HCASR, in accordance with Section 106 of the NHPA and CEQA, is to:

- Identify prehistoric and historic-period archaeological resources within the Area of Potential Effects (APE);
- Recommend procedures to evaluate the legal significance of archaeological resources that may be affected by the undertaking;
- Assess whether the proposed project may impact potentially-significant archaeological resources; and
- Recommend procedures for minimizing impacts on unanticipated archaeological resources and/or human remains.

This HCASR is based on information presented in the Survey of Existing Historic Architectural and Archaeological Resources prepared by Tetra Tech, Inc. (2008). The update was completed by Heidi Koenig (Registered Professional Archaeologist with an M.A. in Cultural Resources Management), a member of the ESA+Orion team, who has conducted archaeological research in California for eight years.

Project Description

Currently BDPL No. 3 is constructed primarily of reinforced-concrete cylinder pipe between the North and South Shutoff Stations, although portions beneath Agua Fria Creek and across Trace B of the Hayward fault are constructed of welded steel. BDPL No. 4 is constructed of prestressed-concrete cylinder pipe and welded steel. Portions of both pipelines are lightly encased in concrete to add strength, and a portion of BDPL No. 4 is constructed within an existing steel pipe.

Improvements under the proposed project include construction of a new BDPL No. 3X between the two shutoff stations (with seismic design features at each fault trace crossing to prevent rupture of the pipeline in the event of a major earthquake on the Hayward fault); abandonment of the existing BDPL No. 3A between the North and South Shutoff Stations once the new BDPL No. 3X is operational; and seismic improvements to BDPL No. 4 to control where breakage would occur and prevent damage to BDPL No. 3X should the pipeline rupture. The new BDPL No. 3X would parallel the two existing pipelines at a depth comparable to or below the existing BDPL Nos. 3 and 4, and all facilities with the exception of access manholes would be constructed below ground. All improvements would be constructed within the 80-foot SFPUC right-of-way between the existing South and North Shutoff Stations. For planning purposes, the project area has been divided into the eight construction zones indicated on Figure 3, and includes four staging areas where grading, but no excavation would occur.

Construction Activities

Installation of the new BDPL No. 3X would require construction activities along the entire 2,360-foot segment of pipeline to be replaced. The method of construction and dimensions of planned excavation in each zone are summarized in Table 1. Construction methods would include pipeline installation within existing corrugated-metal pipes, open-trench excavation, and cut-and-cover excavation. Jack-and-bore or open-trench excavation could be used to cross Agua Fria Creek in Construction Zone 1. In addition, several utilities that cross the proposed BDPL No. 3X alignment would require abandonment, relocation, or protection during construction. Improvements to BDPL No. 4 would be made in the vicinity of an existing slip-joint valve in Zone 5 and in Zone 8. In all zones, excavation sidewalls would be shored or sloped for safety and protection of adjacent structures, including the existing BDPL Nos. 3 and 4.

Area of Potential Effects

According to Section 106, as amended of the NHPA, the APE is defined as:

> …the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking [36 CFR 800.16(d)].

The APE for cultural resources includes all the areas, surface and subsurface, that could experience ground disturbance as a result of proposed project activities including locations of

TABLE 1
COMPONENTS OF THE SEISMIC UPGRADE OF BDPL NOS. 3 AND 4 AT HAYWARD FAULT PROJECT

Construction Zone	Construction Method	Length	Width	Depth
BDPL No. 3 Improvements				
Zone 1 (Point of Connection)	Install wye and valves on BDPL No. 3X	40 ft.	30 ft.	25 ft.
Zone 1 – Option A: Jack-and-bore	Creek crossing by jack-and-bore	125 ft.	30 ft.	30 ft.
		40 ft.	20 ft.	30 ft.
Zone 1 – Option B: Open-cut excavation	Creek crossing by open-cut excavation	125 ft.	10 ft.	30 ft.
Zone 2 – Option A: Use existing CMP	Place BDPL No. 3X in existing CMP3	Approx. 75 ft.	8 ft.	13 ft.
Zone 2 – Option B: Jack-and-bore	Jack-and-bore beneath I-680 on-ramp	60 ft.	60 ft.	25 ft.
Zone 3	Place BDPL No. 3X in open cut excavation	60 ft.	8 ft.	35 ft.
Zone 4 – Option A: Use existing CMP	Place BDPL No. 3X in existing CMP2	No excavation required. Access to the corrugated metal pipeline would be through the open cut excavation in Zones 3 and 5.		
Zone 4 – Option B: Jack-and-bore	Jack-and-bore beneath I-680	60 ft.	60 ft.	30 ft.
Zone 5	Place BDPL No. 3X in open cut excavation	200 ft.	8 ft.	18 ft.
Zone 6	Install and remove temporary bridge at northbound loop on-ramp	No excavation required. Bridge would be supported on installed piles.		
	Place BDPL No. 3X in open cut excavation	40 ft.	8 ft.	15 ft.
Zone 7	Install and remove temporary bridges at Mission Boulevard and northbound diamond on-ramp	No excavation required. Bridge would be supported on installed piles.		
	Construct articulated vault beneath Mission Boulevard	400 ft.	30 ft.	28 ft.
Zone 8	Place BDPL No. 3X in open cut excavation	980 ft.	8 ft.	27 ft.
Zone 8 (Point of Connection)	Install wye and valves on BDPL No. 3X	40 ft.	30 ft.	21 ft.
BDPL No. 4 Improvements				
Zone 6	Encase BDPL No. 4 on either side of existing slip-joint vault at Trace B	120 ft.	35 ft.	20 ft.
Zone 8	Sliplining or replacement of BDPL No. 4 at Trace C	400 ft.	35 ft.	15 ft.

pipeline construction as well as locations of affected utilities, temporary bridges, and staging areas. For the proposed project, the horizontal APE includes the entire 80-foot-wide SFPUC right-of-way and the four staging areas shown on Figure 3. The vertical APE corresponds to the depth of excavation in each construction zone, outlined above in Table 1. Kathleen Ungvarsky, archaeologist at the Corps, approved the APE on January 30, 2009.

The project is also required to comply with CEQA and a discussion of impacts on potentially-significant archaeological resources will be included in the Environmental Impact Report (EIR) for the project. In the Cultural Resources section of the EIR, the APE will be referred to as the CEQA Area of Potential Effects (C-APE). The C-APE is identical to the APE.

Regulatory Context

Federal Regulations

Archaeological resources are protected through the NHPA of 1966, as amended (16 USC 470f), and its implementing regulations, Prior to implementing an "undertaking" (e.g., issuing a federal permit), Section 106 of the NHPA requires federal agencies to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the National Register of Historic Places. Under the NHPA, a find is considered significant if it meets the National Register listing criteria at 36 CFR 60.4, as stated below:

> 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
>
> a) That are associated with events that have made a significant contribution to the broad patterns of our history, or
>
> b) That are associated with the lives of persons significant in our past, or
>
> c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction, or
>
> d) That have yielded, or may be likely to yield, information important in prehistory or history.

Federal review of projects is normally referred to as the Section 106 process. This process is the responsibility of the federal lead agency. The Section 106 review normally involves a four-step procedure, which is described in detail in the implementing regulations (36 CFR Part 800):

- Identify historic properties in consultation with the State Historic Preservation Officer and interested parties;

- Assess the effects of the undertaking on historic properties;
- Consult with the State Historic Preservation Officer, other agencies, and interested parties to develop an agreement that addresses the treatment of historic properties and notify the Advisory Council on Historic Preservation; and finally,
- Proceed with the project according to the conditions of the agreement.

State Regulations and Legal Compliance

The State of California implements the NHPA through its statewide comprehensive cultural resource surveys and preservation programs. The California Office of Historic Preservation (OHP), as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historic Resources Inventory. The State Historic Preservation Officer is an appointed official who implements historic preservation programs within the state's jurisdictions.

California Environmental Quality Act

CEQA, as codified at PRC Sections 21000 et seq., is the principal statute governing the environmental review of projects in the state. CEQA requires lead agencies to determine if a proposed project would have a significant effect on archaeological resources. As defined in PRC Section 21083.2, a "unique" archaeological resource is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it:

- Contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information;
- Has a special and particular quality, such as being the oldest of its type or the best available example of its type; and/or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

The CEQA Guidelines define a historical resource as: (1) a resource in the California Register; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) 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, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the CEQA Guidelines criteria for a historical resource, then the site may meet the threshold of PRC Section 21083 regarding unique archaeological resources. A unique

archaeological resource is "an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3) Is directly associated with a scientifically recognized important prehistoric or historic event or person [PRC Section 21083.2 (g)]."

The CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064[c][4]).

II. Context

Environment

The APE is located at the foot of the Diablo Range, between the southern San Francisco Bay and Mission Peak. It includes the BDPL Nos. 3 and 4 ROW as well as adjacent staging areas on California Department of Transportation (Caltrans) and private property. The surrounding area is mostly developed with private residences, business parks, and landscaping as well as Interstate 680 (I-680), Mission Boulevard, and other roadways. Within the APE, Agua Caliente Creek has been entirely diverted into a culvert near Mission Boulevard and crossing I-680. Upstream of the APE, Agua Fria Creek exists as a natural drainage until it becomes culverted under I-680. Downstream of the I-680 box culvert, the creek enters the APE where approximately 1,000 feet of creek, including that portion within the APE, flows as a natural drainage. The creek is culverted again at the west end of the Extended Stay Hotel parking lot. Areas of the APE that have not been developed or landscaped are generally covered with dense grasses, ruderal vegetation, trees, thick brush, and riparian vegetation.

The climate of the APE is classified as Mediterranean, characterized by seasonal precipitation of wet mild winters and dry summers. It is west of the Coast Range. While the Coast Range provides a wind buffer to the east, the areas west of the Coast Range are unprotected. Summers in the area are characterized by cool marine air and persistent coastal clouds and fog. Spring and fall often bring the warmest and most cloud-free periods to the Bay Area. Rainfall during the spring is infrequent and is considered rare between May and September, when often only around one inch of rainfall accumulates. The polar jet stream and associated periodic storms reach into the lower latitudes of the Mediterranean zones, bringing rain to the region, mostly between November and March. Temperatures are generally moderate, with a comparatively small range of temperatures between the winter low and summer high (Ritter, 2006; Golden Gate Weather Service, 2008).

BDPL Nos. 3 and 4 traverse a terrain that gently slopes from east to west. The soils and sediments within the SFPUC ROW and APE are composed of a series of Pleistocene age (pre-10,000 Before Present [BP]) and Holocene age (10,000 BP to present) deposits (Gmoser et al., 1999:II-68, II-77). The Pleistocene deposits, consisting predominantly of clay, form a raised barrier between Agua Fria and Agua Caliente Creeks (Gmoser et al., 1999:II-77) and provide the base landform upon which subsequent depositional episodes occurred.

Agua Fria and Agua Caliente Creeks played a crucial role in the development of the project vicinity. Over time, the changing creek channels in the vicinity of modern-day Mission Boulevard and I-680 cut into the Pleistocene clay, creating terraces of Holocene-age deposits between the creeks. The creek flows also contributed to the development of an alluvial fan downslope from the Pleistocene clay, to the west of the Mission Boulevard/I-680 intersection (Gmoser et al., 1999:II-81). With time, the alluvial fan stabilized and alluvium also began to cover the Pleistocene clay. Several deposits of Holocene alluvium, from 1.8 and 2.5 meters (5.9 and 8.2 feet) deep, sit atop the clay. Prehistorically, episodic flooding of creeks in this area created raised areas that became desirable for human settlement (Hylkema, 2002:236).

During the historical development of the project area, artificial fill material of varying depths was introduced atop this alluvium, particularly during the construction of I-680 and installation of BDPL Nos. 3 and 4. However, in some areas the Holocene soil deposits are at the ground surface (Gmoser et al., 1999:II-68, II-77). Archaeological subsurface testing programs conducted in the vicinity of the southeastern part of the Mission Boulevard/I-680 intersection identified recent fill deposits between 1.5 and 3 meters (5 and 10 feet) in depth (Gmoser et al., 1999; Rosenthal, 2006:8).

The APE is entirely within a modern landscape of paved streets and highways and residential neighborhoods. Most vegetation is contained within landscaped areas and along Agua Fria Creek, west of I-680.

Historically, the area was dominated by a southern oak woodland environment (Baumhoff, 1978:19) and grassland (Hylkema, 2002:235). The presence of freshwater in Agua Caliente and Agua Fria Creeks likely attracted terrestrial fauna and birds, including elk and migratory birds along the Pacific Flyway (Hylkema, 2002:236; Moratto, 1984:221). Additionally, marine mammals and pinnipeds may have been present along the bayshore, which was only 1.75 miles to the west in 1899 (USGS, 1899). Historically, nearby shorelines would also have offered opportunities for nearshore fishing, shellfish collecting, and hunting in tidal marshes (Hylkema, 2002:233, 235; Moratto, 1984:221).

Prehistoric Context

Many of the first surveys of archaeological sites in the San Francisco Bay region, including the East Bay, were conducted between 1906 and 1908; these surveys yielded the initial documentation of nearly 425 "earth mounds and shell heaps" along the bay shoreline (Nelson, 1909). The most notable of these sites were excavated, such as the Emeryville shellmound (CA-ALA-309), the Ellis Landing site (CA-CCO-295) in Richmond, the Fernandez site (CA-CCO-

259) in Rodeo Valley, and the West Berkeley site (CA-ALA-307) (Morrato, 1984). These dense midden sites have been carbon-14 dated to be 2,310 (±220 years) old, but other evidence from around the bay suggests that human occupation in the region dates back farther, to about 7,000 years ago (Davis and Treganza, 1959).

Archaeologists have developed individual cultural chronological sequences tailored to the archaeology and material culture of each subregion of California. Each of these sequences is based principally on the presence of distinctive cultural traits and stratigraphic separation of deposits. Hylkema (2002:237–250) identified a sequence of four general cultural periods for the southern San Francisco Bay Area based on changes in bead types and on sequences developed by earlier research:

- Early Period, circa (ca.) 2000 to 500 BC
- Middle Period, ca. 500 BC to AD 700
- Middle to Late Transition, ca. AD 700 to 1200
- Late Period, ca. AD 1200 to 1769

The Early Period of the present-day southern San Francisco Bay Area included characteristics similar to those of cultural groups along the southern California coast. In addition to shell bead typologies, this cultural period is characterized based on the presence of flexed burials with red pigment. Most Early Period traits are distinct to the immediate Bay Area, but some are considered similar to traits identified in the Sacramento–San Joaquin Delta (Hylkema, 2002:243–244).

The presence of large and small cobble mortars and varied pestle types is common in Middle Period assemblages and suggests an increased reliance on acorns. Manos and milling stones continue to be present in Middle Period assemblages of the South Bay as well, suggesting a similar continued reliance on hard seeds. Contracting-stemmed and lanceolate projectile points are the most common forms of points, but this artifact type is less common than during the Early Period as a whole. Other artifact types common in Middle Period assemblages include bone fish spears, serrated bone scapulas, beveled elk antler wedges, flexed burials in residential sites, and expressions of cosmological beliefs, such as animal burials, charmstones, quartz crystals, and bone whistles (Hylkema, 2002: 244–247).

The Middle to Late Transition Period initiates a phase of significant social change, including increased social hierarchy and localized economic systems. Burials and associated grave goods indicate an emphasis on wealth. During this period, the importance of *Olivella* shell beads rises; edge-incised and banjo-style *Haliotis* pendants become common; tubular tobacco pipes appear; and bone fish spears are replaced by new harpoon styles (Hylkema, 2002:247).

The social change that began during the Middle to Late Transition Period continued and developed further during the Late Period, as indicated by the elaboration of associated ceremonial grave goods. Various artifacts exhibit stylistic changes, with fine workmanship, decoration, and elaboration of forms. Small obsidian Stockton serrated points increase in Late Period assemblages, indicating the introduction of the bow and arrow during this time. An

additional indication of external interactions comes from the introduction of bone and antler harpoon styles from northern California. This has led some researchers to hypothesize a movement of northern populations south into the San Francisco Bay Area following the withdrawal of the Middle Period Meganos Culture (Hylkema, 2002:247–250).

Ethnography

The APE is within the traditional territory of the Costanoan people, also referred to as Ohlone, Mutsun, and Rumsun (Levy, 1978:485–495). These people, collectively referred to by ethnographers as Costanoan, were actually distinct sociopolitical groups that spoke at least eight languages of the same Penutian language group. The Costanoan occupied a large territory from San Francisco Bay in the north to the Big Sur and Salinas Rivers in the south. The primary sociopolitical unit was the tribelet, or village community, which was overseen by one or more chiefs. The APE is in the greater *Chochenyo* language area and was occupied by the *lisyan* tribelet (Levy, 1978:485).

Economically, the Costanoan engaged in hunting and gathering. Their territory encompassed both coastal and open valley environments that contained a wide variety of resources, including grass seeds, acorns, bulbs and tubers, bear, deer, elk, antelope, a variety of bird species, marine resources, and small mammals. The Costanoan acknowledged private ownership of goods and songs, and village ownership of rights to land and/or natural resources; they appear to have aggressively protected their village territories, requiring monetary payment for access rights in the form of clamshell beads, and even shooting trespassers if caught. After European contact, Costanoan society was severely disrupted by missionization, disease, and displacement.

Historic-period Background

In 1769, Francisco Ortega and Juan Crespi viewed San Francisco Bay from Pacifica, on the northern portion of the San Francisco Peninsula. Crespi and his expedition reached the southern end of the bay and crossed the Guadalupe River into what is present-day Santa Clara County, then crossed Alameda Creek to the Niles area of Fremont. In 1795, another Spanish expedition, led by Pedro Amador from Monterey, settled Mission San Jose in the southern portion of Alameda County, 4.7 kilometers (2.9 miles) southwest of the APE. Mission lands extended from the town of Alviso in the south to San Leandro Creek in the north, and into the San Joaquin Valley to the east. Mexico seized all of its mission lands in the 1830s, and all missions in "Alta" California became secularized. Mission lands were then divided among individual landowners in the form of large land grants called ranchos. The APE is on land that was once a part of Rancho Agua Caliente, which was 3,870 hectares (9,564 acres) granted to Fulgencio Higuero in 1858 (Tetra Tech, 2008).

The 1840s and 1850s was a period of change for the San Francisco Bay Area. When gold was discovered in 1848, a wave of immigrants came to the region, either passing through on their way to the gold mines in the foothills or to settle in the area, attracted by the fertile soil. Many settled on the lands adjacent to Mission San Jose, just southwest of the APE, and established farms. Portuguese immigrants came to the area during this period to work in the many orchards and fields. New communities were established as more settlers came to the region to work as farmers

and ranchers. Schools, churches, stores, and residences were developed during the period between 1848 and 1860. The area that is now Fremont became part of Washington Township in 1853, made up of Niles, Centerville, Newark, Alvarado, Irvington, Decoto, Mission San Jose, and Warm Springs. The township became established as an agricultural center that shifted from cattle raising to wheat production in the late 1890s. Fruit trees were imported from other parts of the western U.S., and orchards and vineyards replaced grain fields by the 1900s (City of Fremont, 2008). Farming was the primary economic mainstay of Fremont throughout the late 19th and into the 20th century. The general project area remained largely undeveloped throughout the 19th century, but by the mid-20th century the area was covered with orchards (Tetra Tech, 2008).

The years following World War II brought a period of dramatic growth to California, as the state transformed from a largely agricultural to an industrial society. Suburban development increased as residents moved out of urban centers to communities where housing was less expensive. Tract homes were first built in Oakland but slowly began to be built in Washington Township (although not within the APE). Washington Township continued to be governed by the Alameda County Board of Supervisors in Oakland, but eventually the residents realized that infrastructure was needed to prepare for the increase in residents that was inevitable. Alameda County was slow to assist the township, so businessmen and the Chambers of Commerce organized a plan to incorporate five of the eight towns into the City of Fremont in 1956.

Construction of the portion of I-680 that connects Highway 101 near San Jose with Highway 780 in Benicia (in 1964), and construction of the Nimitz Freeway (I-880) that links Oakland with San Jose (in 1957), spurred residential growth in Washington township. Further growth was expected and infrastructure was needed to support the increased population with expanded sewer and street systems. In 1956, the town of Fremont, which included the towns of Niles, Mission San Jose, Centerville, Irvington, and Warm Springs, was incorporated. The stretch of I-680 that is within the APE, between Mission Boulevard and Highway 237, was completed in 1971. The portion of Mission Boulevard that is within the APE, also known as CA-262, is the short section of Mission Boulevard linking I-680 and I-880 in Fremont. Construction was completed on this stretch of Mission Boulevard in 1970 (Tetra Tech, 2008).

The first residential subdivisions in the vicinity of the project area were constructed during the early 1960s among orchards and fields (Gardiner, 2002). The Franciscan Park Subdivision, established around the south portion of the project area in 1964, consisted of Mohave Drive, Crawford and Bradley Streets, and Crawford, Bradley, and Aztec Courts, adjacent to lands owned by Lemos. U.S. Geological Survey (USGS) topographic maps depict this housing tract surrounded by orchards and fields until the early 1970s. The residential subdivisions that abut the north end of the project area were developed in the mid-1980s.

San Francisco Water System. The following narrative summary is adapted from the WSIP PEIR cultural resource chapter (San Francisco Planning Department, 2007:4.7-20).

The history of the SFPUC water system begins with the need for water in San Francisco, a semi-arid peninsula. Although San Francisco is surrounded by the Pacific Ocean and the bay, there is

little freshwater nearby. The few creeks and springs in the region were not sufficient to support the population of San Francisco as it grew after the mid-1800s with the discovery of gold. San Francisco's first private water companies formed in the 1850s and underwent consolidation, a pattern that was similar to other urban water companies. The Spring Valley Water Company (SVWC), founded in 1860, was the dominant city water distributor and began to buy other water companies in the area.

SVWC slowly began developing sources of water within San Francisco, then turned to boundaries outside of the city. At the same time that SVWC had dams under construction along the Peninsula, it also looked eastward across the bay to seek additional water sources in Alameda County. One of the means of obtaining more water was from Alameda Creek. In 1887, Spring Valley Water Company diverted water from Alameda Creek to San Francisco, and by 1900, SVWC was diverting over 21.5 million gallons of water a day from the Alameda Creek watershed to San Francisco (San Francisco Planning Department, 2007:4.7-20)

The SFPUC water facilities in the survey population are associated with the Bay Division of the Hetch Hetchy Aqueduct, which delivers water from an impounded section of the Tuolumne River through a series of pipes, tunnels, and reservoirs to the City and County of San Francisco. In total, the Hetch Hetchy system includes multiple dams and reservoirs, conduits, power plants, and approximately 241 kilometers (150 miles) of aqueduct. The Bay Division portion of the aqueduct extends from the Irvington Portal, along the eastern edge of the bayshore plain near Fremont, to the Pulgas Portal/Pulgas Tunnel interface southwest of the Crystal Springs Reservoir on the San Francisco Peninsula. The planning and construction of the Hetch Hetchy Aqueduct stemmed from San Francisco's desire for a municipally owned water supply. Before Hetch Hetchy's construction began in 1913, the city relied primarily on the privately owned SVWC for its water supply. This relationship was forged largely through SVWC's virtual monopoly over the Peninsula's water supply, secured through acquisitions of water sources in San Mateo, Santa Clara, and Alameda Counties and coupled with construction of major reservoirs and dams, including Crystal Springs along San Mateo Creek (SFPUC, 2008).

BDPL 1 was built in 1924 by the City and County of San Francisco as part of the Hetch Hetchy project, but the SVWC leased the pipeline for delivery of Calaveras water to Crystal Springs under a Railroad Commission order engineered by San Francisco's engineers and attorneys. In the 1930s the SFPUC continued to expand its water storage, transmission, and delivery system and to increase the capacity of its power generation facilities. In 1938, the O'Shaughnessy Dam was raised to its current height of 95 meters (312 feet), expanding the capacity of Hetch Hetchy Reservoir (SFPUC, 2008). The construction of the Calaveras Dam and Reservoir created the largest of the Bay Area impoundments and, as such, was consequential to the development and growth of San Francisco. In 1936, BDPL 2 was added, parallel to the first. In 1952, BDPL 3 was added to the system but was routed on a path that skirted the southern end of the bay rather than crossing it. Another portion of BDPL 3 was constructed sometime after 1968, as described below. BDPL 4 was installed in 1973 and also traverses the south end of the bay parallel to BDPL 3.

The *Proposal for Relocation of Bay Division Pipeline No. 3 & No.4 at Agua Caliente Creek Alameda County"* dated September 1968, describes the location and description of the relocation of BDPL 3 San Francisco Public Utilities Commission 1968:title page). Based on the date of the proposal, it can be inferred that the pipeline was actually relocated in the late 1960s or early 1970's, less than 40 years ago. BDPL 3 was relocated at the Mission Boulevard and I-680 interchange at Agua Caliente Creek. The specifications of the relocation plan note that "State Freeway Route 680 will be under construction during this contract." (San Francisco Public Utilities Commission, 1968:30) It is likely that the pipeline was relocated to accommodate the new I-680 freeway alignment that was to pass directly over the pipeline route. Six pipeline appurtenances were relocated, portions of the existing pipelines were removed and abandoned in place, and 118 linear feet (36 linear meters) of pipe were added (San Francisco Public Utilities Commission, 1968:30). The relocation project also called for the removal of 5 concrete manhole riser boxes and metal covers and furnishing and installing 3-20" new manholes (San Francisco Public Utilities Commission, 1968:95). As noted, the realigned portion of BDPL 3 and the newly furnished manhole facilities are the portions of the pipeline that are within the study area and were not constructed in the historic period.

III. Study Methods

Records Search and Literature Review

Research Methods

A records search was conducted by the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University, Rohnert Park, California in January 2008 (NWIC File No. 07-1065). The records search included a 1.6-kilometer (one-mile) buffer around the project construction limits. Fifty-seven previous surveys on file at the NWIC have been conducted within search radius; twelve recorded cultural resource sites and one isolate were also identified within the search radius.

Included in the review were the California Inventory of Historical Resources (California Department of Parks and Recreation, 1976), California Historical Landmarks (DPR, 1990), California Points of Historical Interest (DPR, 1992), and the Historic Properties Directory Listing (OHP, 2006). The Historic Properties Directory includes listings of the National Register and the California Register, and the most recent listing of the California Historical Landmarks and California Points of Historical Interest. Historic topographic quadrangles from 1899 through 1961 were also reviewed.

Records Search and Literature Findings

Eight cultural resources surveys and studies covered portions of the APE and are summarized in Table 2 below.

TABLE 2
PREVIOUS SURVEYS CONDUCTED WITHIN PORTIONS OF THE ARCHAEOLOGICAL APE

Study Number	Date	Author	Title	Results
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

One archaeological site—CA-ALA-576 (formerly CA-ALA-342 and CA-ALA-509)—was identified within the APE. [redacted] The deposit is described as a deeply stratified site, with an extensive midden, numerous burials, rock ovens, and a variety of other features and artifacts (King, 1968; Gmoser et al., 1999). Previously, the site had been identified as two separate deposits, CA-ALA-342 [redacted] (Conger and Burris, 1966) and CA-ALA-509 [redacted] (Cartier, 1989).

The site was first excavated in 1968 (King, 1968). Numerous human burials, rock cooking features, and a wide variety of artifacts were uncovered. The original site maps indicated that the primary midden deposit was located [redacted] Additional investigations by Galvan and Thompson (n.d.; as mentioned in Rosenthal, 2006) focused on deposits within a [redacted]

[redacted] (resulting in the separate designation). Several burials were also encountered as well as rock features and an additional variety of artifacts.

Investigations in 1999 showed that the site was one large deposit, and the NWIC assigned it a new trinomial and primary number (CA-ALA-576). Testing demonstrated that cultural materials are located [redacted] and, despite the extensive modern disturbances in the area, a substantial amount of the site is intact and extends to a depth of 3 meters (9.8 feet) or more below the present-day ground surface (Gmoser, 1999; Gmoser et al., 1999). The site boundaries were enlarged to include the work areas of both King and Galvan and Thompson, and [redacted] Over 135 cubic meters of backhoe trenches were excavated in the 1999 investigation, with approximately 41 cubic meters excavated within the site boundaries. Two stratigraphic components representing two primary periods of occupation were identified: one dating to the early Middle Period (ca. 1900–1800 years BP) and the other to the Late Period (ca. 1300–600 years BP). The project produced a wide range of flaked and ground stone tools, abundant floral and faunal remains, cooking features, and human burials.

Additional testing in 2006 adjusted [redacted] (Rosenthal, 2006). Subsurface testing by Pacific Legacy on the [redacted] (Price and Holson, 1999). Gmoser et al. (1999:III-2) recommended the site as eligible to the National Register under Criterion d, because it has yielded or may be likely to yield additional information important to prehistory (Appendix A). The currently known site boundaries are shown on Figure 3.

Archaeological Resources Outside of the APE. One additional archaeological resource has been recorded close to the APE. An isolate (CA-ALA-ISO-13) was found on [redacted] (Bryne, 1992). [redacted] runs through CA-ALA-576, and there are notations in site records, surveys, and subsurface testing programs of [redacted] within the boundaries of CA-ALA-576 (Banet et al., 1991:10; Cartier, 1989; Rosenthal, 2006:5); thus, the assumption is that this isolated Franciscan chert scraper originated from CA-ALA-576 and [redacted]

Other cultural resources located within 1.6 kilometers (1 mile) of the APE include three prehistoric habitation sites (P-01-000004, P-01-000013, and P-01-000153), one bedrock milling station (P-01-000141), a burial (P-01-002120), two historic-period railroad alignments (P-01-001783 and P-01-010625), and two historic-period architectural resources (C-921 and P-01-001624).

Archaeological Resource Predictions

Based on the property types and settings of recorded archaeological sites within the NWIC records search radius, the ethnographic context of the area, and the archaeological materials and features from CA-ALA-576, the following archaeological property types could be present within the APE:

- *Habitation middens*. Midden sites have distinct boundaries and large amounts of shell, living surfaces, and the remains of daily life activities, and can include burials with associated grave goods. These sites would have been more permanent, used over an extended period, and located [redacted]

- *Temporary camps or food processing localities*. These are ephemeral sites with little to no shell and remains of casual use activities, such as food processing and tool manufacture. Such sites would have been more random and would represent mobile short-term activities. They would be expected in areas that supported [redacted] such as [redacted]

- *Isolated artifacts*. These artifacts generally possess limited information and are unlikely to provide data that addresses important research issues. However, important information can be gained through dating items made of obsidian or artifacts with temporally distinctive styles.

- *Human remains*. Sites that contain human burials and associated grave goods would be located in native soil (non-fill), within or away from habitation sites.

Modern urban development covers almost the entirety of the APE, and artificial fill is present within the top 1.5 to 3 meters (4.9 to 9.8 feet) of elevation. With the exception of the initial installation of BDPL Nos. 3 and 4, subsurface disturbances resulting from development are likely confined to this layer of fill. As such, the fill would act as a cap over the native soils and archaeological deposits below it, as demonstrated by the subsurface testing programs at site CA-ALA-576.

Historic-period archaeological property types in the general vicinity might include Spanish colonial and Mexican residential and agricultural features as well as early American agricultural features, especially barns and outbuildings, associated with the dairy and agricultural industries. Artifacts and features might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. However, based on a review of historic USGS and Thompson and West (1878) maps, there appears to be a low possibility that historic-period archaeological resources are located within the APE.

Native American Consultation

The San Francisco Planning Department requested that the California Native American Heritage Commission (NAHC) search its sacred lands file covering the APE and requested a list of local Native Americans for consultation purposes. The NAHC did not have records of any Native American sacred sites, but recommended eight Native Americans with lineal descent from the area who might be able to identify resources not on file with the NAHC. The NAHC also

suggested contact with the listed Native Americans in the event they had any concerns regarding the project.

The San Francisco Planning Department initiated these consultations via letters mailed on April 1, 2008. As of this publication, no response has been received. These letters are provided in Appendix B of this report.

Archaeological Field Survey Methods

A pedestrian archaeological field survey was undertaken by Tetra Tech archaeologists on January 16 and by an ESA archaeologist on March 19, 2008. A portion of the project area [redacted] but the area was observed during a field meeting with SFPUC staff. The area was landscaped and had little ground surface visibility. The archaeologists conducted the survey of [redacted] by walking 15-meter (50-foot) transects and using surface scrapes due to the dense vegetation. Digital photograph overviews were taken of the surveyed area. The mapped location of CA-ALA-576 and [redacted] All other areas have been extensively disturbed [redacted]

IV. Study Findings

Field Survey Summary

No archaeological resources were observed on the surface within the BDPL Nos. 3 and 4 APE during the archaeological surface survey.

Known Archaeological Resources

One archaeological site CA-ALA-576 has been previously identified within the APE. Testing demonstrated that cultural materials are located [redacted] (Gmoser, 1999; Gmoser et al., 1999). Much of the site is buried beneath the imported artificial fill [redacted] Gmoser et al. (1999:III-2) recommended the site as eligible to the National Register under criterion d, because it has yielded or may be likely to yield additional information important to prehistory. Cultural constituents include an extensive midden, numerous burials, rock ovens, and a variety of other features and artifacts with two distinct stratigraphic components, representing two primary periods of occupation; one dating to the early Middle Period (ca. 1900–1800 years BP) and the other to the Late Period (ca. 1300–600 years BP).

V. Conclusions

Summary Statement

Construction under the proposed project could encounter known archaeological resources within archaeological site CA-ALA-576 and previously unidentified resources outside of this site as discussed below.

Known Archaeological Resources

Prehistoric archaeological site CA-ALA-576 is located within the BDPL Nos. 3 and 4 APE. The site has been previously evaluated as eligible to the National Register. This assessment appears to be an adequate determination and should be used during future decision making regarding implementation of the proposed project. The site cannot be avoided by the project-related construction activities.

Unanticipated Archaeological Resources

Although no additional archaeological sites were identified by the records search or found during the surface survey of the APE, the inadvertent discovery of cultural materials and/or human remains is a high possibility because of the known sensitivity of the area. Previously unidentified archaeological resources and human remains could be encountered during excavations for the installation of the new BDPL No. 3X and improvements to the existing BDPL No. 4 outside of the known archaeological site (CA-ALA-576).

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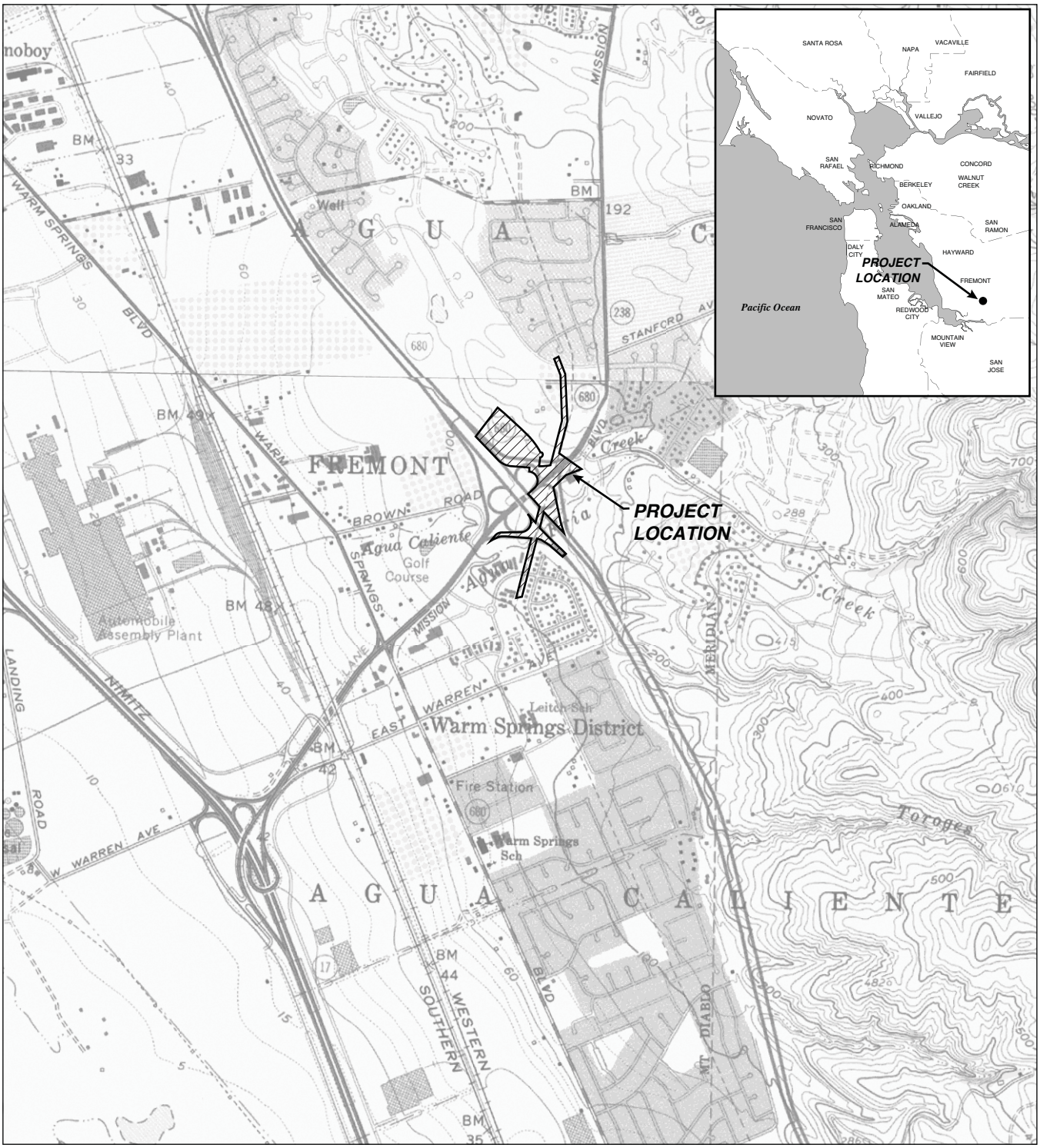

SOURCE: ESA

Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault . 206166.06

Figure 1
Project Location

0 1000
Feet

SOURCE: GlobeXplorer

Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault . 206166.06

Figure 2
Project Location

Sensitive Culture Resources Information

REDACTED

Area of Potential Effects

Archaeological Site CA-ALA-576

Existing BDPL No. 3

Existing BDPL No. 4

SFPUC Right of Way

New BDPL No. 3X

Staging Area 1

Staging Area 2

Staging Area 3

Staging Area 4

Seep and Potential Other Waters of the United States

0 400

Feet

SOURCE: GlobeXplorer; ESA, 2008; URS, 2008a

Note: the entire project area may be used for construction staging

Seismic Upgrade of BDPL Nos. 3 and 4 at Hayward Fault . 206166.06

Figure 3

Archaeological Area of Potential Effects

APPENDIX A – GMOSER ET AL., 1999

Sensitive Culture Resources Information

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APPENDIX B – CORRESPONDENCE

Sensitive Culture Resources Information

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