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GLORIA WAY WELL RETROFIT PROJECT

Joint Initial Study and Environmental Assessment

Prepared for the
City of East Palo Alto and
the U.S. Environmental Protection Agency

February 2013

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TABLE OF CONTENTS

Gloria Way Well Retrofit Project
Joint Initial Study and Environmental Assessment

Appendices

Page

List of Figures

List of Tables

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Acronyms and Abbreviations

ºF	Fahrenheit
ABAG	Association of Bay Area Governments
AADT	annual average daily traffic
AFY	acre-feet per year
AB	Assembly Bill
APE	Area of Potential Effects
ATCM	airborne toxics control measures
BAAQMD	Bay Area Air Quality Management District
BAOS	Bay Area 2005 Ozone Strategy
BAWSCA	Bay Area Water Supply and Conservation Agency
bgs	below the ground surface
BMPs	best management practices
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal Fire	California Department of Forestry and Fire Protection
CARB	California Air Resources Board
Cal-OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAP	Clean Air Plan
CAT	Climate Action Team
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFCs	chlorofluorocarbons
CFR	Code of Federal Regulations
CH_4	methane
CRHR	California Register of Historical Resources
CIWMB	California Integrated Waste Management Board
CNAHC	California Native American Heritage Commission
CNDDB	California National Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CY	cubic yards
dB	decibel
dBA	A-weighted decibel
DPM	diesel particulate matter
DTSC	California Department of Toxic Substances Control
EA	Environmental Assessment
EIR	Environmental Impact Report

EIS	Environmental Impact Statement
ESL	Environmental Screening Levels
FESA	Federal Endangered Species Act
FONSI	Finding of No Significant Impact
FTA	Federal Transit Administration
GHGs	greenhouse gases
gpm	gallons per minute
GWP	global warming potential
HAPs	hazardous air pollutants
HFCs	hydrofluorocarbons
HUD	U.S. Department of Housing and Urban Development
hp	horsepower
IS	Initial Study
I-280	Interstate 280
Joint IS/EA	Joint Initial Study/Environmental Assessment
Ldn	day-night noise level
Leq	steady-state energy level
LOS	level of service
MMT	million metric tons
MND	Mitigated Negative Declaration
mph	miles per hour
MRZs	Mineral Resource Zones
msl	mean sea level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	national emissions standards for HAPs
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
N_2O	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
OEHHA	Office of Environmental Health Hazard Assessment
PCBs	polychlorinated biphenyls
PFCs	perfluorocarbons
PG&E	Pacific Gas & Electric
PM_{10}	particulate matter, 10 microns or less in diameter
$PM_{2.5}$	particulate matter, 2.5 microns or less in diameter
ppm	parts per million

PPV	peak particle velocity
RMS	root mean square
ROGs	reactive organic compounds
RWQCB	(California) Regional Water Quality Control Board
SAAP	Special Appropriations Act Project
SamTrans	San Mateo County Transit District
SF Bay RWQCB	San Francisco Bay Regional Water Quality Control Board
SFPUC	San Francisco Public Utilities Commission
SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SR 84	State Route 84
SR 109	State Route 109
SR 114	State Route 114
STAG	State and Tribal Assistance Grants
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
SVP	Society of Vertebrate Paleontology
TACs	toxic air contaminants
TBACT	Best Available Control Technology for Toxics
TDS	total dissolved solids
tpy	tons per year
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
U.S. EPA	U.S. Environmental Protection Agency
U.S. 101	U.S. Highway 101
VdB	decibel notation
VOCs	volatile organic compounds
VOC	volatile organic compound
WHR	Wildlife-Habitat Relationship
WMP	Watershed Management Plan
WSIP	Water System Improvement Program
WTP	Water Treatment Plant
ZEV	zero-emission vehicle

GLORIA WAY RETROFIT PROJECT

Joint Initial Study and Environmental Assessment

1.	**Project Title:**	Gloria Way Well Retrofit Project
2.	**CEQA Lead Agency Name and Address:**	City of East Palo Alto Community Development Department, Planning Division 1960 Tate Street East Palo Alto, CA 94303
3.	**CEQA Lead Agency Contact Person:**	Brent Butler, Planning Manager Telephone: (650) 853-3185
4.	**NEPA Lead Agency Name and Address:**	U.S. Environmental Protection Agency WTR-4 75 Hawthorne Street San Francisco, CA 94105
5.	**NEPA Lead Agency Contact Person:**	Elizabeth Borowiec Telephone: (415) 972-3419
6.	**Project Location:**	1531 Bay Road East Palo Alto, CA APN 063-102-390
7.	**Project Proponent's Name and Address:**	City of East Palo Alto Community Development Department 1960 Tate Street East Palo Alto, CA 94303
8.	**General Plan Designation:**	Medium/High Density Residential
9.	**Zoning:**	R-1-5000 (Single-Family Residential)
10.	**Description of Project:**	See Section 2.0
11.	**Surrounding Land Uses and Setting:**	See Chapter 3

12. Other public agencies who have permit authority or discretionary actions related to the project (including but are not limited to):

- U.S. Department of Housing and Urban Development (HUD)
- California Department of Public Health
- Bay Area Air Quality Management District

- San Mateo County Environmental Health Department
- East Palo Alto Sanitary District
- City of East Palo Alto Public Works Department

11. Actions for which this Joint Initial Study/Environmental Assessment may be applied (including but not limited to):

- Grant funding from HUD and U.S. EPA

12. Compliance with environmental review requirements under CEQA and NEPA:

See Section 1.2.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" and includes a mitigation measure, as described in the correlated sections on the following pages.

☒ Aesthetics	☒ Air Quality	☐ Mineral Resources
☒ Biological Resources	☒ Cultural Resources	☒ Geology / Soils
☒ Hazards & Hazardous Materials	☒ Hydrology and Water Quality	☒ Noise
☐ Land Use and Land Use Planning	☐ Population and Housing	☐ Public Services
☒ Traffic and Transportation	☐ Greenhouse Gas Emissions	☐ Recreation
☐ Agriculture & Forestry Resources	☐ Utilities / Service Systems	
☐ Mandatory Findings of Significance		

SECTION 1
Purpose and Need

1.1 Introduction

The City of East Palo Alto (City) proposes to rehabilitate an existing City-owned groundwater production well—the Gloria Way Well—to secure a source of potable water supplies in the event of an emergency, assist the City in meeting projected near-term water supply deficits, and support planned development and economic growth. Use of the Gloria Way Well is currently limited to non-potable uses. With the exception of pipelines to connect the Gloria Way Well to the existing water supply distribution system in the bordering road rights-of-way, all of the proposed facilities and improvements would be located within the 0.12-acre Gloria Way Well site.

The National Environmental Policy Act (NEPA) requires agencies to evaluate a No Action Alternative along with its impacts in the preparation of an Environmental Assessment (EA). This allows decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The No Action Alternative would result in the continuation of existing conditions and no facility improvements would be constructed.

This Joint Initial Study/Environmental Assessment (Joint IS/EA) evaluates and compares the environmental impacts of the proposed project and the No Action Alternative.

1.2 Purpose of this Environmental Review

This document is a Joint IS/EA prepared for the Gloria Way Well Retrofit project ("proposed project" for purposes of the California Environmental Quality Act; "proposed action" for purposes of NEPA). This Joint IS/EA has been prepared by both the City of East Palo Alto, as Lead Agency under CEQA, and the U.S. Environmental Protection Agency (U.S. EPA), as Lead Agency under NEPA. This Joint IS/EA is intended to comply with both CEQA and NEPA. See California Code of Regulations (CCR), Title 14, Division 6, Chapter 3 (State CEQA Guidelines), Section 15222 ("Preparation of Joint Documents"); and Code of Federal Regulations (CFR), Title 40 Section 1502.25, 1506.2, and 1506.4 (authority for combining federal and state environmental documents).

The U.S. EPA awarded the City of East Palo Alto Special Appropriations Act Project (SAAP) grant[1] funding for planning and preliminary design of the proposed project, and the City plans to apply for a grant amendment to cover final design and construction. Before awarding grant funding for project construction,[2] the U.S. EPA is required to conduct NEPA environmental

[1] Also referred to as STAG grants because they are contained in the State and Tribal Assistance Grants section.
[2] SAAP grant funding for preliminary project design and planning are not subject to NEPA.

review (40 C.F.R. Part 6). The City has also been awarded a Community Development Block Grant from the U.S. Department of Housing and Urban Development (HUD) and is using this grant to prepare this Joint IS/EA in accordance with both CEQA and NEPA environmental review requirements.

An Initial Study (IS) is prepared by a CEQA Lead Agency to determine if a project may have a significant effect on the environment. In accordance with State CEQA Guidelines Section 15064(a), an Environmental Impact Report (EIR) must be prepared if there is substantial evidence that a project may have a significant effect on the environment. A Negative Declaration (ND) or Mitigated Negative Declaration (MND) may be prepared if the CEQA Lead Agency determines that the project would have no potentially significant impacts, or if mitigation measures, conditions of approval, or the design of the project would mitigate potentially significant impacts to a less-than-significant level (State CEQA Guidelines Section 15070).

Similar to an IS, an EA is prepared by a NEPA Lead Agency to determine the severity of environmental effects associated with a proposed action and to briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI) (40 CFR Section 1508.9).

Once the Joint IS/EA review process has been completed, the City will consider the adoption of a MND and the U.S. EPA will consider whether to issue a FONSI. If it is determined that significant impacts would occur with implementation of the project that could not be reduced to a less-than-significant level through adoption of mitigation measures, an EIR and/or an EIS would need to be prepared. Only after the above procedures are completed can the proposed project be approved and funded with subsequent finalization of site and engineering plans and construction of the project.

1.3 Project Purpose and Need

The City currently relies on the San Francisco Public Utilities Commission (SFPUC) for its potable water supplies. In the event of a catastrophic event resulting in a disruption of SFPUC supplies, the City would be without potable water for human consumption and emergency uses (e.g., fire suppression). The City's annual water demand has exceeded the City's allocation from SFPUC in 8 of the last 13 years. Although in recent years demand has been within the City's allocation of SFPUC supplies, the reduced demand is likely attributable to current economic conditions. The City must secure additional supplies to address its near-term supply deficit and to provide sufficient supplies to support future growth and economic development.

As part of its efforts to secure supplemental and backup water supplies, the City proposes to rehabilitate an existing City-owned groundwater production well—the Gloria Way Well—located at the northwestern corner of Bay Road and Gloria Way. Due to elevated levels of iron and manganese in the groundwater, use of the Gloria Way Well is currently limited to non-potable uses. As part of the Gloria Way Well Retrofit project (or proposed project), the City would address these water quality concerns by constructing an on-site treatment system, and reintroduce groundwater

from the Gloria Way Well into the water distribution system to assist the City in meeting near-term and long-term water supply deficits and support planned development and economic growth.

1.3.1 East Palo Alto Municipal Water Supply System

The City of East Palo Alto serves domestic water supplies to approximately 4,200 residential, commercial, and industrial customers within a 2.5-square-mile service area that encompasses most of the City and a portion of Menlo Park[3] east of Highway 101. The City serves approximately 93 percent of the potable water supplies used within the City limits; the remaining 7 percent is served by the Palo Alto Park Mutual Water Company[4] and O'Connor Tract Cooperative Water Company (IRM, 2011a).[5]

The City currently relies on the SFPUC for its domestic water supplies. The majority of SFPUC supplies are surface water from Hetch Hetchy Reservoir in the Sierra Nevada, but also includes supplies from local watersheds in Alameda and San Mateo Counties. Treated SFPUC water enters the City's water system via three turnouts and then flows by gravity through the city's pressurized distribution network. The City's distribution system is comprised of a network of 1-½-inch to 12-inch-diameter pipes. Because the City's municipal water supply system does not have any storage, any interruption in SFPUC supplies could leave the City without potable water.

The City owns and operates a groundwater production well, called the Gloria Way Well, located at the intersection of Gloria Way and Bay Road. The Gloria Way Well is located in the San Francisquito Creek Groundwater Subbasin, which is part of the Santa Clara Valley Groundwater Basin. Groundwater produced from the Gloria Way Well is used for nonpotable purposes (e.g., street cleaning and construction dust control). The Gloria Way Well was constructed in 1979 and put into operation in 1981 to supplement the City's domestic water supplies. However, shortly after the well was brought online, residents began to complain that the water had a strange taste and odor, which was due to elevated concentrations of manganese in the water. Although the water is safe to drink and passes all primary drinking water standards, water samples collected from the Gloria Way Well have exceeded secondary drinking water standards (aesthetic standards) for manganese, chloride, specific conductance, and total dissolved solids (TDS) (Todd Engineers, 2012). As a result, in 1999, the Gloria Way Well was removed from domestic service and disconnected from the distribution system (Todd Engineers, 2012). The City currently pumps approximately 5 acre-feet per year (AFY) of groundwater from the Gloria Way Well for nonpotable needs (IRM, 2010; City of East Palo Alto, 2012).

The City's municipal water supply system is operated through the City's Department of Public Works under contract by American Water Enterprises. American Water Enterprise manages the distribution and operation, of the municipal water system on behalf of, and under contract with, the City (IRM, 2011a).

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3 The City of East Palo Alto supplies water to approximately 200 customers in Menlo Park. The water sold to these customers is not included in East Palo Alto's individual water supply allocation from SFPUC.

4 Palo Alto Park Mutual Water Company operates five groundwater wells in the City of East Palo Alto to serve 650 residences (Todd Engineers, 2012).

5 O'Connor Tract Cooperative Mutual Water Company operates two groundwater production wells located in the City of Menlo Park and serves approximately 300 residences (Todd Engineers, 2012).

1.3.2 Existing and Projected Water Demand

SFPUC holds a Water Supply Agreement with its wholesale water customers in Alameda, San Mateo, and Santa Clara Counties. The wholesale customers are largely represented by the Bay Area Water Supply and Conservation Agency (BAWSCA). Some of the BAWSCA member agencies have other sources of water in addition to what they receive from the SFPUC regional water system, while others rely completely on the SFPUC for supply. In accordance with the Water Supply Agreement, the City of East Palo Alto receives 2,199 AFY of potable water supplies from the Hetch Hetchy system. As indicated in **Table 1-1**, below, the City has exceeded its allocation in 8 of the last 13 years. In years when other wholesale customers do not use their full contractual supply, the City can purchase water above the City's individual allocation. However, since during any given year the other wholesale customers could opt to use their full allocation, the City cannot rely on these supplies to meet future demand.

TABLE 1-1
HISTORICAL POTABLE WATER USE

Water Year	Total Usage (AF)	Under/(Over) SFPUC Allocation
1999/2000	2,289	(90)
2000/2001	2,400	(201)
2001/2002	2,283	(84)
2002/2003	2,274	(75)
2003/2004	2,475	(276)
2004/2005	1,731	468
2005/2006	2,260	(61)
2006/2007	2,245	(46)
2007/2008	2,306	(107)
2008/2009	2,155	44
2009/2010	1,872	327
2010/2011	1,915	284
2011/2012	1,953	246
Average	**2,166**	**33**

SOURCE: IRM, 2010; City of East Palo Alto, 2012.

The City's projected future water demand and supplies during a normal year are presented in **Table 1-2**. During dry years when there is less surface water available for diversion in the SFPUC watersheds, SFPUC wholesale customers could be subject to system-wide rationings. In connection with the adoption of the Water Supply Agreement between wholesale customers and the SFPUC, the wholesale customers adopted a Water Shortage Allocation Plan that defines how water would be allocated between the BAWSCA wholesaye customers during water shortages caused by drought. For planning purposes, the Water Shortage Allocation Plan includes two potential scenarios: Scenario 1 assumes the SFPUC will continue to deliver water to the cities of San Jose and Santa Clara into the future, and Scenario 2 assumes that the SFPUC will discontinue

deliveries to San Jose and Santa Clara after 2018. The City's allocation under Scenarios 1 and 2 are presented in **Table 1-3**. As indicated in this table, the City's supplies could be reduced from 2,199 AF to 1,882 AF during dry years (by 14 percent, or 317 AF).

TABLE 1-2
PROJECTED FUTURE WATER DEMAND AND SUPPLIES
(Normal Years, acre-feet)

Year	2015	2020	2025	2030	2035
East Palo Alto Projected Annual Demand	2,658	2,780	2,960	3,161	3,400
SFPUC Supplies	2,199	2,199	2,199	2,199	2,199
Shortfall	**459**	**581**	**761**	**962**	**1,201**

SOURCE: IRM, 2011b.

TABLE 1-3
PROJECTED FUTURE WATER DEMAND AND SUPPLIES
(Dry Years, acre-feet)

Year	2015	2020	2025	2030	2035
East Palo Alto Projected Annual Demand[a]	2,658	2,780	2,960	3,161	3,400
Scenario 1 – SFPUC Supplies[b]	1,904	1,893	1,893	1,882	1,882
Scenario 1 – Shortfall	754	887	1,067	1,279	1,518
Scenario 2 – SFPUC Supplies[b]	1,904	1,904	1,904	1,893	1,893
Scenario 2 – Shortfall	754	876	1,056	1,268	1,507

SOURCES: [a] IRM, 2011b; [b]BAWSCA, 2012.

The substantial future growth in the City of East Palo Alto is planned in the northeast corner of the city, within the 350-acre Ravenswood / 4 Corners Transit-Oriented Development Specific Plan area. Future planned development in the area includes research and development, industrial, office, retail, civic, and residential land uses. The Specific Plan calls for infill, mixed-use development; all future planned development and infrastructure in the Specific Plan would be constructed within already developed areas.

Development within the Specific Plan area is anticipated to occur through 2035, the plan horizon. Future water demand in the Specific Plan area at plan buildout in 2035 is estimated at 820 AFY. At current levels of supply and during normal precipitation years, the City faces a projected water supply shortfall of 459 AFY in 2015, and 1,201 AFY in 2035. During dry years the shortfall increases to 754 AFY in 2015 and 1,518 AFY in 2035 (IGM, 2011b; BAWSCA, 2012). With implementation of the Gloria Way Well Retrofit project, the City would secure up to 420 AFY of additional potable water supplies, thereby addressing short-term supply deficits and assisting the City in meeting future demand associated with planned development and economic growth.

References – Purpose and Need

Bay Area Water Supply and Conservation Agency (BAWSCA), 2012. *Application of Tier 2 Drought Implementation Plan Under Two Future Scenarios – With and Without San Jose and Santa Clara.* January 25, 2012.

City of East Palo Alto. Water usage information for June 2009 through June 2012. December 2012.

HDR, 2004. *East Palo Alto Area Gloria Way Well Investigation Summary Report*. Prepared on behalf of the California American Water Company. April 2004.

Integrated Resource Management, Inc. (IRM), 2010. *City of East Palo Alto Water System Master Plan*. October 19, 2010.

Integrated Resource Management, Inc. (IRM), 2011a. *City of East Palo Alto 2010 Urban Water Management Plan*. Adopted June 21, 2011.

Integrated Resource Management, Inc. (IRM), 2011b. *City of East Palo Alto Ravenswood/4 Corners Transit Oriented Development Specific Plan Water Supply Assessment*. August 30, 2011.

SECTION 2
Project Description

2.1 Project Objectives

The specific objectives of the proposed project are to:

- Secure supplemental water supplies to assist the City in meeting projected near-term supply deficits, and to support future growth and economic development in the Ravenswood / 4 Corners Transit-Oriented Specific Plan area.
- Provide backup potable water supplies in the event that deliveries from the SFPUC are interrupted during an emergency.

2.2 Proposed Project or Preferred Action

2.2.1 Project Location

The Gloria Way Well is located at [APN 063-102-390]. The Gloria Way Well site is a 0.12-acre parcel located at the northwest corner of Gloria Way and Bay Road in the City of East Palo Alto, San Mateo County, California (see **Figure 1**). The site is owned by the City of East Palo Alto.

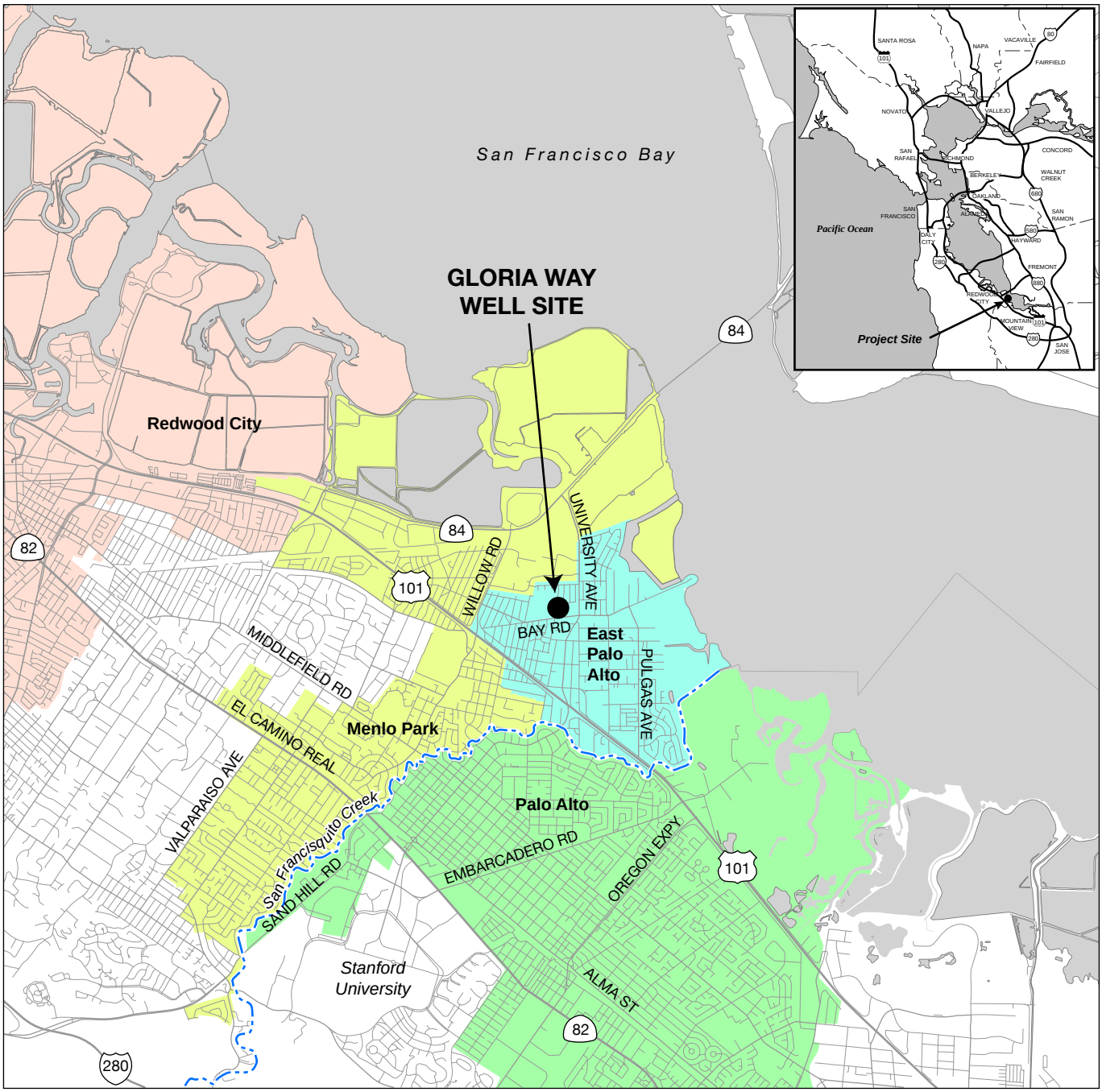
Site Address:	1531 Bay Road East Palo Alto, CA 94303
Assessor's Parcel No.:	063-102-390
Section/Township/Range:	S25 / T5S / R3W
Latitude/Longitude:	37° 28'17.77"N / 122° 08'31.14"W

2.2.2 Existing Facilities at Gloria Way Well Site

Existing facilities at the Gloria Way Well site include the production well, a well pump, a pressure tank, an electrical transformer,[1] and various pipes and valves.

The Gloria Way Well was constructed in 1979 to a total drill depth of 351 feet below the ground surface (bgs), and a completed well depth of 339 feet bgs. The well casing is 12.75 inches in diameter and made of steel. Reportedly, the well was initially screened from 258 to 280 feet bgs,

[1] The main purpose of a transformer is to alter a supply voltage from a primary power circuit to a secondary power circuit at the voltage desired to run a particular piece of electrical equipment. Electrical equipment running at a higher voltage is more efficient and requires smaller conduits.



SOURCE: ESA, 2013

Gloria Way Well Retrofit Project . 211859

Figure 1
Project Location Map

and from 318 to 323 feet bgs. However, different screening intervals were identified during a 2004 video survey of the well.[2] Monterey sand filter pack[3] extends from 100 to 350 feet bgs is sealed with cement grout from 0 to 100 feet bgs (Todd Engineers, 2012a).

A comprehensive well inspection and performance test conducted on the Gloria Way Well in 2004 for the purpose of evaluating the physical condition of the Gloria Way Well found the well to be in good structural and operating condition. Video surveys of the interior of the well found the well casing and screens to be in good condition, with minimal corrosion and no holes or deformation (HDR, 2004). A 4-hour pump test conducted in 2012 indicated the well's sustainable pumping rate to be approximately 300 gallons per minute (gpm) (Todd Engineers, 2012a).

The existing well pump is an aboveground 30-horsepower (hp) vertical turbine pump. The pump is set at a depth of 250 feet bgs, and is rated for 300 gpm (Todd Engineers, 2012a).

The pressure tank is an aboveground cylindrical tank approximately 10 feet long and 5 feet in diameter. The tank has a capacity of roughly 1,500-gallons. Pressure tanks are used to provide short-term pressure in the distribution system, and eliminate rapid cycling (frequent, short on/off cycles) of the well pump, which reduces the longevity of the well pump.

The existing electrical transformer is cooled with non-toxic oil and is enclosed within a metal box that is approximately 10 feet long, 10 feet tall, and 3 feet wide. The transformer is used to alter the voltage from existing underground powerlines to power the well pump.

2.2.3 Proposed Improvements

As part of the Gloria Way Well Retrofit project, all existing water supply facilities and infrastructure on the Gloria Way Well site would be removed except the production well, well pump, and electrical transformer. Manganese wellhead treatment facilities and supporting infrastructure would be constructed onsite to treat groundwater from the Gloria Way Well to below regulatory levels. The manganese treatment facilities would also serve to reduce iron concentrations in the groundwater, thereby further improving the aesthetics of the water. The following facilities and improvements would be constructed and installed at the site:

- Two aboveground steel pressure filters for manganese removal. Each filter would be cylindrical, 5 feet in diameter, and 10 feet tall. The filters would address water quality concerns associated with secondary drinking standards for water pumped from the Gloria Way Well.

- An aboveground mixing tank for blending groundwater with SFPUC supplies prior to conveying to distribution system. The mixing tank would be 12 feet in diameter and 12 feet tall.

[2] The video survey revealed the actual screening intervals are from 259 to 282 feet bgs, and 319.5 to 325.5 feet bgs (HDR, 2004).

[3] "Filter pack" refers to coarse sand or fine gravel that is placed between the well borehole and the well screen for the purposes of settling out fine-grained particles that may otherwise enter the well, and increasing the effective hydraulic diameter of the well (the area in which water from the aquifer can move freely into a well).

- An aboveground backwash tank to hold backwash effluent from routine filter flushing. The backwash tank would be 12 feet in diameter and 12 feet tall.

- Two 30 gpm, 1-hp decant pumps to decant the reusable backwash effluent back into the system for treatment and subsequent distribution to customers. The pumps would be housed in a single-story 10-foot by 10-foot concrete building.

- Two 600 gpm, 50-hp finished water pumps to pump water from the mixing tank into the distribution system. These pumps would be housed in a single-story 15-foot by 15-foot concrete building.

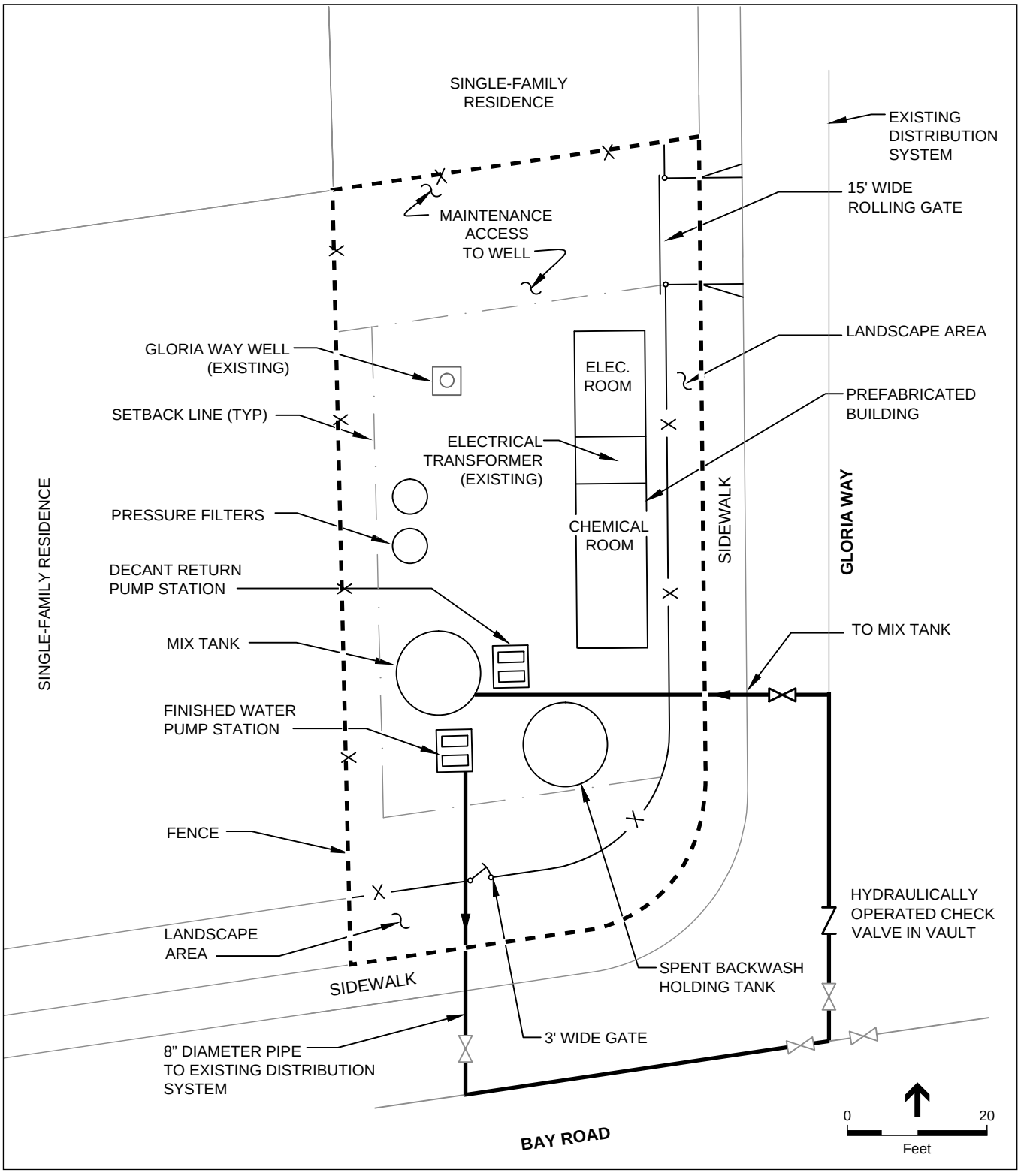
- A single-story electrical/chemical building to house the electrical controls for operations and treatment chemicals. The electrical/chemical building would be a 44-foot-long by 22-foot-wide concrete masonry unit building. The building would be equipped with secondary containment for sodium hypochlorite, chlorine, ammonia, and any other hazardous chemicals associated with the treatment of water.

- 200 linear feet of 8-inch diameter pipe to be installed between the proposed finished water pump station and mixing tank and the existing distribution system along Bay Road and Gloria Way.

- A 40-hp gasoline-powered emergency backup generator for use as a backup power supply during power outages.

Maintenance vehicle parking would be accommodated in the northern portion of the site. All aboveground well components would be fenced off with security fencing and new security lighting would be installed. A preliminary site plan of the Gloria Way Well site is shown in **Figure 2**.

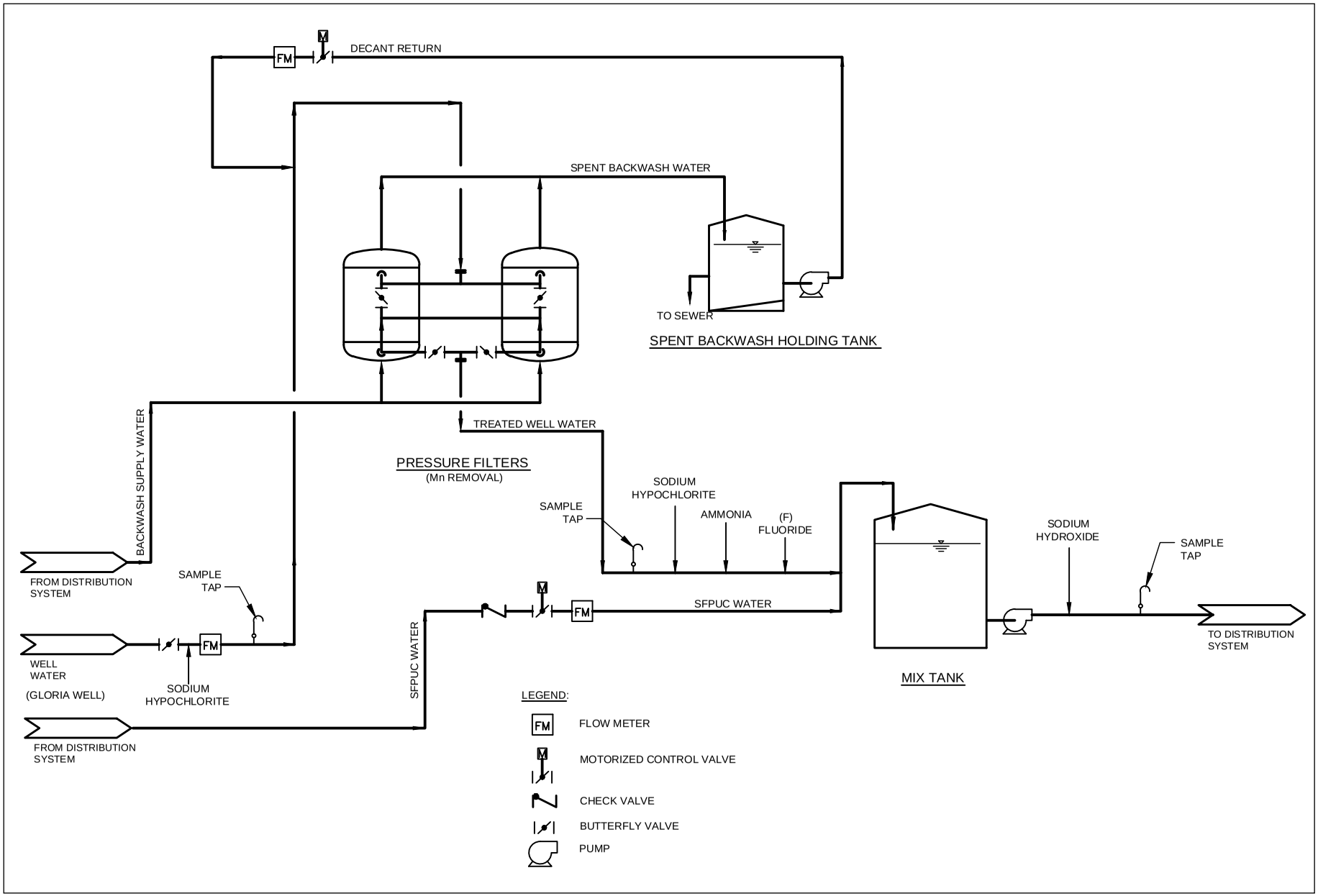
The proposed project would provide manganese wellhead treatment using wellhead oxidation and pressure filtration. Manganese in water pumped from the Gloria Way Well would first be oxidized by injecting sodium hypochlorite into the raw groundwater, thereby converting the manganese to manganese oxide so that it can then be removed by filtration. The sodium hypochlorite injected during oxidation process would also provide initial disinfection. The water would then pass through the manganese pressure filters. Although a portion of the backwash water from the pressure filters would be re-circulated to the pressure filters, up to 3,000 gallons of sludge from manganese removal would be discharged to the sanitary sewer system each week. After passing through the pressure filters, the treated groundwater would be further chemically conditioned with sodium hypochlorite, ammonia, and fluoride before being conveyed to a mix tank where the treated groundwater would be blended with SFPUC water supplies at a ratio of 1:1. The City will conduct on-going field testing of pH from the Gloria Way Well to determine if pH adjustment is needed to prevent corrosion of pipelines and plumbing materials. If pH adjustment is determined necessary, sodium hydroxide would be added to the blended water prior to pumping the water to the existing water supply distribution system. See **Figure 3** for a schematic flow diagram of the treatment process.



SOURCE: Todd Engineers, 2012; ESA, 2013

Gloria Way Well Retrofit Project . 211859

Figure 2
Gloria Way Well Conceptual Site Plan



SOURCE: Todd Engineers, 2012

Figure 3

Manganese Treatment System Schematic Flow Diagram

2.2.4 Project Construction

The project site would be accessed via Bay Road and Gloria Way. Construction staging would occur primarily on the Gloria Way Well site. If needed, additional staging could occur in the City Hall parking lot located two blocks east at University Avenue and Bay Road. Construction equipment and materials would not be stored on City streets. Heavy equipment to be used during project construction could include:

- asphalt paver
- compactor/roller
- electric generator
- loader
- backhoe
- crane
- air compressors
- grader
- excavator
- small crane
- dump truck
- welding and cutting equipment
- water truck
- concrete mixer

Construction activities would include vegetation clearing, site grading and excavation, concrete work for foundations, construction of the pump buildings and the electrical/chemical building, installation of treatment facilities, installation of pipelines, street repaving, and disposal of construction waste and debris. The pressure filters, mixing tank, and backwash holding tank would be prefabricated and hauled to the site on flatbed trucks at the time of installation.

A total of 200 linear feet of 8-inch diameter pipe would be installed between the proposed finished water pump station and the existing distribution system along Bay Road, and between the proposed mixing tank and the existing distribution system along Gloria Way. For each of these pipelines, the contractor would excavate a 3-foot-wide by 5-foot-deep trench extending from the Gloria Way Well site to existing pipelines in the road right-of-way immediately in front of the site.

Given the space limitations at the Gloria Way Well site, each project component would be constructed individually with a relatively small crew with various trades scheduled as needed, with a maximum of seven people working at any one time. Facility components and materials would be delivered to the site for direct placement at the time it is to be installed.

The entire 0.12-acre Gloria Way Well site could be disturbed during construction. It is assumed all existing vegetation on the site, including two mature trees, shrubs, and bushes would be removed to prepare for and accommodate construction. All earthwork, excavation, and surface disturbance associated with project construction would occur within the Gloria Way Well site and immediately-adjacent road right-of-ways.

During construction, traffic along Gloria Way would be restricted to one lane in vicinity of trenching during installation of the 8-inch-diameter pipeline for up to one week. In addition, the Gloria Way road right-of-way immediately in front of the site could be used for construction activities, resulting in intermittent lane closures during working hours for the full 12 months of construction. With the exception of up to one week when the right hand lane on Bay Road would be closed for installation of the other 8-inch-diameter pipeline, Bay Road would remain open during construction.

With the exception of the 200 linear feet of 8-inch-diameter pipeline and the two pump stations, all of which would require excavations of up to 5 feet deep, all other facility improvements would require excavations of 3 feet deep or less. Project construction activities would generate approximately 200 cubic yards of excess spoils requiring offsite disposal at an appropriate landfill.

Project construction would occur over a 12-month period. Project construction is anticipated to begin in early 2014, with completion in early 2015. Construction would occur on weekdays, between 7:30 a.m. and 6:00 p.m. No nighttime or weekend construction would occur.

2.2.5 Operations and Maintenance

As part of the proposed project, the City would increase pumping at the Gloria Way Well from 5 AFY to 420 AFY. Groundwater would be drawn from the San Francisquito Creek Groundwater Subbasin, which is part of the Santa Clara Valley Groundwater Basin. Although it is anticipated that the Gloria Way Well would be operated only part-time, the City may elect to operate the well continuously (24 hours a day). The well would be operated automatically, with routine visits by facility operators to check pumps and treatment equipment and monitor performance. Treatment chemicals would be delivered about once a week in a vehicle that meets Department of Transportation licensing requirements for chemical transport. The emergency backup generator would be tested quarterly onsite for 2 hours to ensure functionality.

2.3 Required Permits and Approvals

City of East Palo Alto would be required to apply for and obtain the following approvals for the proposed project:

Federal

- U.S. Department of Housing and Urban Development – Compliance with the National Environmental Protection Act (NEPA) environmental review requirements for grant funding.
- U.S. Environmental Protection Agency – Compliance with NEPA environmental review requirements for grant funding.

State

- California Department of Public Health – Site plan and specifications and operating permits.

Local/Regional

- San Mateo County Environmental Health Department – Hazardous Materials Business Plan for chemical handling and storage.
- Bay Area Air Quality Management District – Operational permit for emergency generator.
- City of East Palo Alto Public Works Department – Roadway encroachment and drainage permit.

- East Palo Alto Sanitary District – Sludge discharges to sanitary sewer.

References – Project Description

Todd Engineers, 2005. *Feasibility of Supplemental Groundwater Resources Development, Menlo Park and East Palo Alto, California.* August 2005.

Todd Engineers, 2012. *Gloria Way Well Production Alternatives Analysis & East Palo Alto Water Security Feasibility Study*. November 2012.

CHAPTER 3
Environmental Analysis

Introduction to the Environmental Analysis

Organization of this Chapter

This chapter of the Joint Initial Study and Environmental Assessment (Joint IS/EA) presents an analysis of environmental factors that may be affected by the proposed Gloria Way Well Retrofit project (proposed project). The impact analyses presented in the topical sections of this chapter have been prepared consistent with CEQA and NEPA requirements. Most topical sections include the following information:

- **Setting**—Describes existing baseline conditions, including the environmental context.
- **Regulatory Framework**—Summarizes federal, state, and local regulations relevant to the project.
- **Environmental Checklist and Discussion of Impacts**—The significance criteria presented in the Environmnetal Checklist is based on Appendix G of the CEQA Guidelines. This section identifies impact significance determinations and provides a discussion of the effects of the proposed project as they relate to each issue.

Refer to Chapter 4, Other NEPA Requirements, for additional documentation pertinent to NEPA environmental review.

Enumeration of Significance Criteria and Impact Discussions

Each significance criteria in the environmental checklist is numbered using an alpha-numerical system that identifies the topical section. Comment to NO-1 denotes the discussion of project impacts associated with the first significance criteria in the Noise section. The letter codes used to identify the significance criteria and corresponding impact discussions in this chapter are:

LU: Land Use and Land Use Planning
PH: Population and Housing
AE: Aesthetics
TR: Traffic and Transportation
NO: Noise
AQ: Air Quality
GHG: Greenhouse Gas Emissions
CR: Cultural Resources

BIO: Biological Resources
GEO: Geology, Soils, and Seismicity
HYD: Hydrology and Water Quality
HZ: Hazards and Hazardous Materials
UT: Utilities and Service Systems
PS: Public Services
RE: Recreation
MR: Mineral Resources
AF: Agriculture and Forest Resources

Mitigation measures are numbered in the order in which they appear in the corresponding topical section. For example, Mitigation Measure TR-1 refers to the first mitigation in the Traffic and Transportation section. A brief title is included in parentheses to easily identify the mitigation measure. In some cases, mitigation measures may apply to multiple impacts in multiple topical sections.

Significance Determinations

An impact determination is provided for each criterion in the environmental checklist. The categories used to designate impact significance are:

- **No Impact or Not Applicable.** No impact would occur, or a significance criterion is considered not applicable if there is no potential for impacts or the environmental resource does not occur within the project area. For example, there would be no impacts related to tree removal if there were no trees within the project disturbance area, or if no tree removal was proposed as part of the project.

- **Less than Significant Impact.** This determination applies if there is a potential for some limited impact, but not a substantial adverse effect that qualifies under the significance criteria as a significant impact.

- **Less than Significant with Mitigation Incorporated.** This determination applies if the project would result in an adverse effect that meets the significance criteria, but feasible mitigation is available that would reduce the impact to a less-than-significant level.

- **Potentially Significant and Unavoidable.** This determination applies if the project would result in an adverse effect that meets the significance criteria, but for which there appears to be no feasible mitigation available to reduce the impact to a less-than-significant level, or if mitigation is available to lessen the impact but the residual effect after implementation of the measure would remain significant. Therefore, the impact is significant and unavoidable.

This Joint IS/EA prescribes mitigation measures to reduce all potentially significant impacts to a less-than-significant level.

3.1 Land Use and Land Use Planning

This section evaluates the potential for implementation of the proposed project to result in land use impacts, or conflict with applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect.

Setting

The 0.12-acre Gloria Way Well site is located in at the northwest corner of Gloria Way and Bay Road, in an urbanized area of East Palo Alto. The project site is bounded by Bay Road to the south and Gloria Way to the east. Surrounding land uses include single-family residential on adjoining parcels to the west and north, and to the south (across Bay Road); multi-family residential to the east (across Gloria Way); and mixed residential and neighborhood commercial uses along Bay Road to the southeast and southwest. The project site and surrounding area slopes gently (less than 1 percent) to the northeast.

The project site is currently developed with the existing Gloria Way Well and auxiliary water supply facilities and infrastructure. The existing facilities are enclosed within a chain-link fence. Views of the existing facilities are partially obscured by existing vegetation located outside of the fence line.

Regulatory Framework

East Palo Alto General Plan

Adopted in December 1999, the *City of East Palo Alto General Plan* contains seven elements (Land Use, Circulation, Conservation and Open Space, Noise, Safety, Economic Development, and Housing) that provide goals and policies for the physical development of the city. The General Plan serves to guide land use decisions, ensure future development projects are consistent with community goals, and that adequate urban services are available to meet the needs of new development. In addition, the General Plan contains some policies that relate to physical environmental issues (City of East Palo Alto, 1999). Any physical environmental impacts that could result from conflicts with General Plan policies are analyzed in this document.

General Plan land use designations in the vicinity of the project site include residential and neighborhood commercial uses. The project site is located in the "University/Bay Neighborhood" and is designated as "Medium/High Density Residential". The "Medium/High Density Residential" classification is intended for "single-family dwelling units and multi-family dwellings including duplexes, condominiums, townhomes, and apartments" (City of East Palo Alto, 1999).

Ravenswood / 4 Corners Transit-Oriented Development Specific Plan

Adopted in September 2012, the Ravenswood / 4 Corners Transit-Oriented Development Specific Plan (Specific Plan) covers an approximately 350-acre area in the northeast portion of East Palo Alto. (Note that the Gloria Way Well site is not within the Specific Plan area.) A Specific Plan is a

planning and regulatory tool available to local governments in the State of California. As allowed under California State law (Government Code 65450 et seq.), the City will use the Specific Plan, in part, to implement its adopted General Plan. The Specific Plan amended the General Plan and Zoning Ordinance to establish new development standards in the Specific Plan area (City of East Palo Alto, 2012). The great majority of future growth in the City of East Palo Alto is planned to occur within the Specific Plan area through the 2035 plan horizon. As indicated in Chapter 2, Project Description, implementation of the Gloria Way Well Retrofit project would provide approximately 420 acre-feet per year of potable water supplies to meet existing supply shortfalls and assist the City in accommodating planned future growth and economic development within the Specific Plan area.

Zoning

The 0.12-acre project site is zoned for R-1-5000 (Single-Family Residential), which allows for one residential development per parcel. Public utilities, facilities, and structures are conditionally permitted in the R-1 Zoning District (City of East Palo Alto, 2003).

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
LAND USE AND LAND USE PLANNING — Would the project:					
LU-1	Physically divide an established community?	☐	☐	☐	☒
LU-2	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
LU-3	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Impact Discussion for LU-1

The proposed project involves improvements to existing water supply facilities and infrastructure at the Gloria Way Well site. With the exception of approximately 120 linear feet of 8-inch-diameter pipe that would be installed within the Gloria Way and Bay Road right-of-ways, all of the proposed improvements would be constructed within the 0.12-acre project site. The proposed improvements would not introduce any land uses or design features that would physically divide the surrounding community. Therefore, no impact would occur.

Mitigation: None required.

Impact Discussion for LU-2

As described above, land uses at the project site are designated as residential in the General Plan and the local Zoning Ordinance. However, land uses related to public utilities, facilities, and structures are conditionally permitted in R-1 Zoning Districts. Further, the proposed project is comprised of improvements to existing water supply facilities and infrastructure and would not introduce a non-conforming use to the project site or vicinity.

The *East Palo Alto General Plan* contains policies aimed at promoting land uses that preserve and improve the quality of life for the City's residents in a manner that appropriately reflects the City's values. As described throughout this chapter, project construction activities could cause temporary but short-term impacts related to aesthetics; traffic and transportation; noise; air quality; cultural resources; biological resources; hydrology and water quality; and hazards and hazardous materials; however, all potentially significant construction-related impacts would be reduced to a less-than-significant level with implementation of mitigation measures prescribed herein. Project operations would be similar to existing operations at the site and would not conflict with land use policies. Therefore, no impacts associated with conflicts with land use plans and policies would result.

Mitigation: None required.

Impact Discussion for LU-3

The project site does not lie within a habitat conservation plan or natural community conservation plan. No impact would occur.

Mitigation: None required.

References – Land Use and Land Use Planning

City of East Palo Alto, 1999. *City of East Palo Alto General Plan*, Land Use Element. Adopted December 1999.

City of East Palo Alto, 2003. *City of East Palo Alto Zoning Ordinance 2002 Edition.* Chapter 6, R-1 (One-Family Residential District). Last updated October 31, 2003. Available online: http://www.ci.east-palo-alto.ca.us/planningdiv/pdf/EPA_Zoning_regs_2003.pdf; accessed November 29, 2012.

City of East Palo Alto, 2012. Ravenswood */ 4 Corners Transit-Oriented Development Specific Plan*. Adopted September 2012.

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3.2 Population and Housing

Setting

The following identifies existing conditions and projected future trends for the City of East Palo Alto. The citywide context for population and housing is also presented, along with identification of the relationship between jobs and housing. Association of Bay Area Governments (ABAG) is the regional planning agency for the nine counties and 101 cities and towns of the San Francisco Bay region. ABAG data is the primary data source for the environmental setting. In addition, supplemental data from the United States Census (U.S. Census) is also provided. While U.S. Census data provides the baseline statistical data, information for communities such as the City of East Palo Alto is only collected during the nationwide Census performed every ten years. As a result, the most current actual Census count data is for 2010.

The City currently has a population of 28,273 residents and approximately 7,759 households (U.S. Census, 2012). According to most recent ABAG projections, the total population of the City would be 43,300 residents, with 10,260 households by year 2035 (ABAG, 2009). With respect to the jobs-to-housing ratio, the City currently has more employed residents than jobs with a ratio of approximately one job within the City per five employed residents.[1] Based on ABAG projections, the number of jobs within the City is expected to increase to 7,080 by year 2035 (ABAG, 2009).

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
POPULATION AND HOUSING — Would the project:					
PH-1	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
PH-2	Displace substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
PH-3	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Impact Discussion for PH-1

The proposed project involves the construction of water supply facilities and associated improvements for an existing groundwater production well and does not involve the construction

[1] According to ABAG projections, the City had approximately 2,300 jobs in 2010 and approximately 11,150 employed residents in the City in 2010 (ABAG, 2009).

of housing. Construction of the project would require a maximum of seven workers at the project site during the 12-month construction period; however, the project would not result in any long-term employment. Thus, the project would not directly induce population growth.

With implementation of the Gloria Way Well Retrofit project, in addition to providing backup water supplies in the event of an emergency, the City would secure up to 420 AFY of potable water supplies to assist the City in meeting near-term and long-term water supply deficits. By providing supplemental water supplies for use within the City limits, the proposed project would, at least partially, remove one potential obstacle to growth and, therefore, could have an indirect growth-inducing effect. The indirect effects of population growth and accompanying development can include increased demand on community services and public service infrastructure; increased traffic and noise; degradation of air and water quality; and conversion of open space to urban uses. Local land use plans (e.g., the *City of East Palo Alto General Plan* and the *Ravenswood / 4 Corners Transit-Oriented Development Specific Plan*) prepared and adopted by the City establish land use development patterns and growth policies that are intended to allow for the orderly expansion of urban development supported by adequate public services, including water supply, roadway infrastructure, sewer service, and solid waste service. The City conducts CEQA environmental review on its local land use plans to assess the secondary effects of their planned growth.

Most of the substantial future growth in the City of East Palo Alto is planned in the northeast portion of the city, within the 350-acre Ravenswood/4 Corners Transit-Oriented Development Specific Plan area. The Specific Plan provides a greater level of specificity than the General Plan for the Specific Plan area. The Specific Plan is intended as a planning and regulatory tool. As allowed under California State law (Government Code 65450 et seq.), the City of East Palo Alto will use the Specific Plan, in part, to implement its adopted General Plan. Future planned development in the Specific Plan area includes research and development, industrial, office, retail, civic, and residential land uses. Planned development in the Specific Plan area is anticipated to occur through 2035, which is considered the plan horizon. The average annual increase in water demand associated with buildout under the Specific Plan is 820 acre-feet per year (AFY) (IRM, 2011). Implementation of the proposed project would assist the City in addressing future water supply shortfalls.

The environmental impacts associated with development in accordance with the Specific Plan were evaluated in the *Ravenswood/4 Corners Transit-Oriented Development Specific Plan Environmental Impact Report (EIR)* (DC&E, 2012). This EIR is incorporated by reference pursuant to CEQA Guidelines Section 15150. The EIR identified the environmental effects associated with planned growth in the Specific Plan area (see **Table 3.2-1**).

Implementation of the Gloria Way Well Retrofit project would support planned growth in the Specific Plan area. The projected growth that would, in part, be supported by the proposed project is consistent with the adopted *Ravenswood/4 Corners Transit-Oriented Development Specific Plan* and the *East Palo Alto General Plan*. The impacts of planned growth are identified and evaluated in the Specific Plan EIR. Some of the impacts of planned growth cannot be reduced to a

TABLE 3.2-1
SIGNIFICANT IMPACTS ASSOCIATED WITH PLANNED GROWTH IN THE SPECIFIC PLAN AREA

Significant and Unavoidable Impacts

- Conflicts with Clean Air Plan projections and control measures due to increased vehicle use and greater regional emissions of nonattainment air pollutants than assumed in the Air Quality Plan.
- Increased vehicular traffic would further degrade LOS conditions at Willow Road and Bayfront Expressway during the PM peak hour.
- Increased vehicular traffic would further degrade LOS conditions at University Avenue and Bayfront Expressway during the PM peak hour.
- Increased vehicular traffic would result in significant traffic impacts at Highway 101 and State Route 84 in the vicinity of the Specific Plan area.
- Cumulative traffic impacts at Willow Road and Bayfront Expressway during the PM peak hour.
- Cumulative traffic impacts at University Avenue and Bayfront Expressway during the AM and PM peak hours.
- Cumulative traffic impacts at University Avenue and Bay Road during the AM and PM peak hours.
- Cumulative traffic impacts at University Avenue and Highway 101 southbound off-ramp during the PM peak hour.
- Cumulative traffic impacts at University Avenue and Woodland Avenue during the PM peak hour.
- Cumulative traffic impacts at Pulgas Avenue and Bayshore Road during the PM peak hour.
- Cumulative traffic impacts at Embarcadero Road and Bayshore Road during the AM and PM peak hours.
- Cumulative traffic impacts at University Avenue and Loop Road during the PM peak hour.
- Cumulative traffic impacts at Highway 101 and State Route 84 in the vicinity of the Specific Plan area.

Significant but Mitigable Impacts

- Expose sensitive receptors to unhealthy levels of toxic air contaminants (TACs) and $PM_{2.5}$.
- New restaurants could be a source of offensive odors in mixed-use areas.
- Construction-related impacts on special-status plant species.
- Construction-related impacts on salt marsh harvest mouse and salt marsh wandering shrew.
- Construction-related impacts on nesting birds, including California black rail, California clapper rail, and western burrowing owl.
- Impacts to northern coastal salt marsh habitat.
- Disturbance and possible loss of wetland habitat.
- Impacts to paleontological resources during earthmoving activities.
- Damage to buildings and other structures from strong ground shaking.
- Soil hazards associated with liquefaction and/or differential settlement during an earthquake.
- Lateral spreading in Specific Plan areas close to the San Francisco Bay.
- Soils hazards associated with differential compression and subsidence.
- Soils hazards associated with expansive soils.
- Exposure of residential land uses to excessive outdoor and indoor noise levels.
- Exceedance of the City's noise ordinance limits at residential land uses.
- Construction-related vibration in close proximity to vibration-sensitive structures.
- Construction-related noise increases at businesses and residences.
- Cumulative noise impacts at existing residences at northern edge of the Specific Plan area.
- Increased traffic impacts at University Avenue and Purdue Avenue during the PM peak hour.
- Increased traffic impacts at University Avenue and Bay Road during AM and PM peak hours.
- Increased traffic impacts at University Avenue and Donohoe Street during PM peak hour.
- Increased traffic impacts at Clarke Avenue and Bay Road during AM and PM peak hours.
- Increased traffic impacts at Demeter Street and Bay Road during AM and PM peak hours.
- Increased traffic impacts at Pulgas Avenue and Bay Road during AM and PM peak hours.
- Impeded pedestrian travel resulting from the lack of continuous sidewalks in the Specific Plan area.
- Cumulative traffic impacts at University Avenue and Purdue Avenue during the AM and PM peak hours.
- Cumulative traffic impacts at University Avenue and Donohoe Street during the AM and PM peak hours.
- Cumulative traffic impacts at Clarke Avenue and Bay Road during the AM and PM peak hours.
- Cumulative traffic impacts at Demeter Street and Bay Road during the AM and PM peak hours.
- Cumulative traffic impacts at Pulgas Avenue and Bay Road during the AM and PM peak hours.
- Cumulative traffic impacts at Pulgas Avenue and Bayshore Road during the PM peak hour.

SOURCE: DC&E, 2012.

less-than-significant level. In these cases, the decision-making body (e.g., city council) identified overriding considerations that justified adoption of the Specific Plan despite its adverse impacts. Implementation of the Gloria Way Well Retrofit project would not result in additional growth-inducing impacts beyond those identified in the Specific Plan EIR. Therefore, no impact would result.

Mitigation: None required.

Impact Discussion for PH-2 and PH-3

The proposed project involves the construction of water supply facilities and improvements on a parcel currently developed with water supply facilities. The project would not displace existing housing or people, nor necessitate the construction of replacement housing elsewhere. As such, no impact would result.

Mitigation: None required.

References – Population and Housing

Association of Bay Area Governments (ABAG), 2009. ABAG Projections 2009 (December, 2009).

Integrated Resource Management, Inc. (IRM), 2011. *City of East Palo Alto Ravenswood/4 Corners Transit Oriented Development Specific Plan Water Supply Assessment*. August 30, 2011.

Design, Community, & Development (DC&E), 2012. *City of East Palo Alto Ravenswood/4 Corners Transit Oriented Development Specific Plan Final Environmental Impact Report.* State Clearinghouse No. 2011052006. Certified September 2012.

United States (U.S.) Census Bureau. 2012. *American FactFinder, 2010 American Community Survey*, *City of East Palo Alto Total Population and Total Households*, 2012.

3.3 Aesthetics

Setting

Visual Character

The City of East Palo Alto is located in the southern region of the San Francisco Peninsula and is bordered by the City of Menlo Park to the north and west, San Francisquito Creek to the south, and the San Francisco Bay, Cooley Landing, and the Palo Alto Baylands Nature Preserve to the east. Existing development in the western portion of the City (west of Illinois Street, including the Gloria Way Well site) is primarily low- to medium-density residential, with commercial development concentrated in the 4 Corners area, near the Bay Road/University Avenue intersection, and along major roadways. The eastern half of the City (generally east of Illinois Street) is primarily industrial. The eastern half of the City also includes several vacant properties, some of which are former industrial sites.

The 0.12-acre project site is located at the northwest corner of Bay Road and Gloria Way. The project site is surrounded by single-family residences on adjoining parcels to the north and west; multi-family residential land uses to the east (across Gloria Way); and single-family residential, multi-family residential, and commercial land uses to the south along Bay Road. Existing single-family residences in the project vicinity are generally one-story detached homes that were constructed prior to the 1960s. Multi-family residences are generally two-story and built between 1980.

Existing development on the project site is comprised of the Gloria Way Well and related water supply facilities enclosed within a chain-link fence. The existing facilities are partially screened by mature trees and bushes located outside of the fenced area, which limit views of the project site from motorists, pedestrians, and cyclists traveling along Bay Road and Gloria Way. Vegetative ground cover is comprised primarily of nonnative grasses and weeds. Photos depicting views of the project site and adjacent areas are presented below.

Light and Glare

The project site is located in a built-out urban environment that has existing sources of light and glare associated with street lights, neighboring land uses, and vehicles traveling along Bay Road and Gloria Way.

View of the project site looking from the northeastern corner of the Gloria Way/Bay Road intersection.

View of the project site looking from the sidewalk on the north side of Bay Road.

View of single-family residences on south side of Bay Road, looking from the project site south.

View of multi-family residential building across Gloria Way, looking from the project site east.

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
AESTHETICS — Would the project:					
AE-1	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
AE-2	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☒	☐	☐
AE-3	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☒	☐	☐
AE-4	Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	☐	☐	☒	☐

Impact Discussion for AE-1

The Gloria Way Well site is not located within a designated scenic corridor, or within viewing distance of designated scenic routes or locally recognized visual landmarks. There are no designated scenic views or vistas in the vicinity of the Gloria Way Well site. Therefore, impacts on scenic vistas and scenic resources are not applicable to the proposed project, and no impact would result.

Mitigation: None required.

Impact Discussion for AE-2 and AE-3

The California Department of Transportation (Caltrans) administers California's Scenic Highway Program. The Scenic Highway Program was established by the California Legislature in 1963 for the purpose of preserving and protecting designated scenic highway corridors from changes that would diminish scenic views. The highways closest to the Gloria Way Well site (i.e., U.S. 101, State Route [SR] 109, and SR 114) are not designated scenic highways. Interstate 280, the nearest scenic highway, is located approximately six miles west of the project site and does not provide views of the site (Caltrans, 2012). There are no historic buildings or structures on the project site (see Section 3.8, Cultural Resources).

The 0.12-acre project site is generally level, sloping very gently (less than one percent) to the northeast. The project site is minimally landscaped with two mature privet trees and three large oleander bushes. Existing water supply facilities and infrastructure on the project site are partially screened by the existing vegetation.

Project construction activities would occur over a 12-month period and would involve the on-site storage of construction materials and equipment. Although construction activities would not occur within a scenic corridor, or within viewing distance of designated scenic roadways or locally recognized visual landmarks, project construction would be visible from Gloria Way and Bay Road. Project construction activities and staging could temporarily degrade the visual character of the project site and immediate vicinity, a potentially significant impact. However, with implementation of **Mitigation Measure AE-1** (**Maintain Clean and Orderly Construction Site**), this construction-related impact would be reduced to a less-than-significant level.

The project would include the construction of water supply facilities and infrastructure at the site that are similar in size, height, and bulk as the components currently onsite. The new facilities would be consistent with the existing facilities on site. All existing vegetation on the site, including the trees and bushes, would be removed during construction. Vegetation removal would result in adverse effects to visual quality, a potentially significant impact. However, with implementation of **Mitigation Measure AE-2** (**Landscaping Plan**), this impact would be reduced to a less-than-significant level. For information regarding the City's tree ordinance, refer to Section 3.8, Biological Resources.

Mitigation:

Mitigation Measure AE-1: Maintain Clean and Orderly Construction Site.

As part of contractor specifications, the City shall require that construction contractors maintain the project site in a clean and orderly fashion, including cleaning up the site at the end of each work day, removing trash and construction debris at regular intervals, stockpiling materials neatly, and organizing equipment and material storage areas. To the extent feasible, construction equipment and materials shall be stored away from public views.

Mitigation Measure AE-2: Landscaping Plan.

The City shall prepare and implement a landscaping plan to replace existing vegetation and partially screen facilities from public views. At a minimum, landscape vegetation shall include noninvasive bushes, shrubs, and groundcover. If feasible and if requested by the Director of Planning as a condition of the tree removal permit, replacement trees shall also be included in the landscaping plan. The City shall monitor landscape plantings annually for five years after project completion to ensure the plantings have established. Performance standards shall include 80 percent survival rate for bushes, shrubs, and groundcover, and self-sustainable trees at the end of the five years (if applicable).

Impact Discussion for AE-4

As part of the proposed project, the City would install new lighting at the project site, but these new sources of light would be consistent with the existing light and glare conditions in the area. The new lighting would be photovoltaic, with some lights operated on a timer and other lights operated manually (i.e., using a light switch) by facility operators when accessing onsite facilities such as the proposed electrical/chemical building. The new lighting would not be expected to result in substantial changes in light or glare, nor adversely affect day or nighttime views in the project vicinity. Therefore, light and glare impacts would be less than significant.

Mitigation: None required.

References – Aesthetics

California department of Transportation. Officially Designated State Scenic Highways. Available online: http://www.dot.ca.gov/hq/LandArch/scenic/schwy.htm. Accessed December 13, 2012.

3.4 Traffic and Transportation

This section describes and evaluates issues related to traffic and transportation in the context of the proposed project. Discussed are the physical and regulatory setting; the baseline for determining environmental impacts; and potential impacts and appropriate mitigation measures, as needed.

Setting

Roadway Network

Regional Roadways

U.S. Highway 101 (U.S. 101) is a ten-lane roadway that runs northwest to southeast through the City of East Palo Alto and transverses the entire length of San Mateo County (and extends to points farther north and south). There are two full interchanges in proximity of the project site, including one interchange at State Route 114 (Willow Road), approximately 0.75 mile west of the project site, and one interchange at State Route 109 (University Avenue), approximately 0.75 mile south of the project site. The most recent data published by the California Department of Transportation (Caltrans) indicates that the annual average daily traffic (AADT) volume on U.S. 101 is between 181,000 and 189,000 vehicles near the project site (Caltrans, 2012a).

State Route 84 (SR 84), also known as Bayfront Expressway, is a generally a six-lane, east-west roadway that extends from U.S. 101 and Marsh Road (to the west), across the Dumbarton Bridge, to Interstate 880 in Alameda County (to the east). Data published by Caltrans indicates that the AADT on SR 84 is between 51,000 and 57,000 vehicles near the project site (Caltrans, 2012a).

State Route 109 (SR 109), also known as University Avenue, is a generally a four-lane, north-south roadway that extends from U.S. 101 (to the south) to SR 84 (to the north). SR 109 is a boulevard, with an intermittent landscaped median and left-turn pocket lanes, where appropriate. There are raised, continuous sidewalks along both sides of the roadway and there are striped crosswalks at all intersections. Data published by Caltrans indicates that the AADT on SR 109 is about 20,400 vehicles near the project site (Caltrans, 2012a). The roadway is designated as both an arterial street[1] and a designated truck route in the *City of East Palo Alto General Plan* (1999).

State Route 114 (SR 114), also known as Willow Road, is a four-lane, north-south roadway that extends from U.S. 101 (to the south) to SR 84 (to the north). SR 114 is a boulevard, with an intermittent landscaped median and left-turn pocket lanes, where appropriate. There are raised, continuous sidewalks along both sides of the roadway and there are striped crosswalks at all intersections. There are also bicycle lanes along both sides of the roadway. Data published by Caltrans indicates that the AADT on SR 114 is about 36,500 vehicles near the project site (Caltrans, 2012a).

[1] An arterial street is a major street carrying the traffic of local and collector streets to and from freeways and other major streets, with controlled intersections and generally providing direct access to nonresidential properties.

Local Roadways

Bay Road is a two-lane, east-west roadway that extends from Saratoga Avenue (to the west) to Ravenswood Open Space Preserve, where the roadway dead-ends immediately east of Tara Street (to the east). The roadway includes a striped median; raised sidewalks along both sides of the roadway, stenciled and striped crosswalks at intersections, and on-street parking is permitted along both sides of the roadway. Bay Road is a designated collector street[2] between Newbridge Street and University Avenue. Bay Road is a designated arterial street, between University Avenue and Pulgas Avenue, and a collector street from Pulgas Avenue to its eastern terminus. In addition, Bay Road is a designated truck route from University Avenue to its eastern terminus (City of East Palo Alto, 1999).

Gloria Way is a two-lane, north-south neighborhood roadway that extends from Kavanaugh Drive (to the north) and Bay Road (to the south). The roadway includes sidewalks along both sides of the road and on-street parking is permitted along both sides of the road.

Transit Services

The San Mateo County Transit District (SamTrans) provides fixed-route and paratransit bus services within the City of East Palo Alto. SamTrans currently operates three fixed-route bus lines throughout the City of East Palo Alto and these lines operate during weekdays and weekends. SamTrans Route 281 provides bus transit service in proximity of the project, and the route currently operates between the Stanford Shopping Center in Palo Alto and Onetta Harris Community Center in Menlo Park. The bus route operates along University Avenue and Bay Road, and there is a bus stop located at the intersection. During hours of operation, the fixed-route bus line operates on weekdays (Monday through Friday) between 6:25 a.m. and 10:40 p.m. and on weekends (Saturday and Sunday) between 8:30 a.m. and 7:00 p.m. The bus operates between about 30-minute headways (the frequency, or interval of time between buses traveling in any given direction along a designated route) during both weekdays and weekends (SamTrans, 2012).

Pedestrian and Bicycle Facilities

Pedestrian facilities generally consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. The project site is located in an urbanized, built-out environment, which includes an established pedestrian network composed of connecting sidewalks and crosswalks along most roadways. Raised, concrete sidewalks exist along Gloria Way and Bay Road adjacent to the project site. The intersection of Bay Road and Gloria Way includes high-visibility, stenciled crosswalks along each intersection approach.

Bikeway planning and design in California typically relies on guidelines and design standards established by Caltrans in the Highway Design Manual (HDM) *Chapter 1000: Bicycle Transportation Design* (Caltrans 2012b). Caltrans provides for three distinct types of bikeway facilities: Class I (bicycle paths separated from roads); Class II (striped bicycle lanes within the

[2] A collector street is a street for traffic moving between arterial and local streets, generally providing direct access to properties.

paved areas of roadways); and Class III (marked bike routes that allow cyclists to share streets with vehicles). In the vicinity of the project site, there are intermittent Class II bicycle lanes and Class III bicycle routes (shared lanes) located along the both sides of Bay Road. There is a Class II bicycle lane adjacent to the project site, on the north side of Bay Road (westbound travel direction). There are no designated bicycle routes along Gloria Way.

According to the *City of East Palo Alto Bay Access Master Plan*, there are several pedestrian and bicycle improvements planned throughout the City, including the development of series of trails (Class I facilities) to connect East Palo Alto neighborhoods to the San Francisco Bay, the Bay Trail, Cooley Landing, and other regional and local recreational areas. As stated in the Master Plan, such planned improvements and developments would likely occur over a 20 to 25 year period (City of East Palo Alto, 2007).

Regulatory Framework

Code of Federal Regulations

The Code of Federal Regulations (CFR) includes the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Governments. The rules under Title 49 address safety considerations for the transport of goods, materials, and substances and govern the transportation of hazardous materials, including types of materials and marking of the transportation vehicles (United States Federal Government, 2012).

Department of Transportation

Caltrans manages interregional transportation, including management and construction of the California highway system. In addition, Caltrans is responsible for permitting and regulation of the use of state roadways. Roads that are likely to be used as access routes by construction workers and construction vehicles to the project site include U.S. 101, SR 84, SR 109, and SR 114.

Caltrans' construction practices require temporary traffic control planning "during any time the normal function of a roadway is suspended," (Caltrans, 2012c). Furthermore, Caltrans requires that permits be obtained for transportation of oversized loads and transportation of certain materials, and for construction-related traffic disturbance.

City of East Palo Alto General Plan

The *City of East Palo Alto General Plan* (1999) establishes goals and policies that guide the development of the city. Specific goals and policies outlined in the *Circulation Element* of the General Plan that pertain to the project are described below.

Circulation Goal 2: Provide a system of local roadways that meets community needs.

***Policy 2.2*:** Improve the East Palo Alto circulation system roadways in concert with land development to maintain adequate levels of service.

Circulation Goal 3: Increase the use of public transit and non-vehicular methods of travel.

***Policy 3.3*:** Provide and maintain a circulation system that supports bicycle and pedestrian travel.

Circulation Goal 4: Improve traffic safety in residential neighborhoods.

***Policy 4.1*:** Provide traffic management improvements within residential neighborhoods where through traffic creates public safety concerns.

Approach to Impact Analysis

This section describes the methods used to determine the extent to which construction and operational activities associated with the proposed project would affect the surrounding transportation network.

Construction of the proposed project facilities would generate vehicle traffic associated with construction worker vehicles, materials and equipment deliveries, and haul trucks. Construction-related vehicles would travel to and from the project site on local and regional roads. During project operations, facility operators would conduct routine visits to the Gloria Way Well site to check pumps and treatment equipment and monitor performance; however, such activities may not occur on a daily basis.

Construction Schedule and Activities

As described in Chapter 2, Project Description, demolition and removal of existing facilities at the project site (with the exception of the existing well, well pump, and electrical transformer) and construction of new facility components would occur over a 12-month period (beginning in early 2014, with completion in early 2015). Given space limitations at the Gloria Way Well site, each project component would be constructed individually with a relatively small crew with various trades scheduled as needed. Therefore, construction activities associated with individual project components would occur at different times and with minimum overlapping construction activities over the 12-month period.

Each of the construction activities (site preparation, mobilization of equipment, removal of existing facility components, installation of new components, backfilling of excavated areas, and site restoration) would generate various types of vehicle trips: construction workers' vehicles traveling to and from the project site, haul trucks for disposal of excess spoils, and delivery trucks bringing materials and equipment to the project site. Construction activities would occur during daytime hours (7:30 a.m. to 6:00 p.m.), five days a week (Monday through Friday). No demolition or construction activities would occur during weekends or nighttime hours (i.e., after 6:00 p.m.). Staging of construction equipment and materials would occur primarily at the project site. If needed, additional staging could occur in the City Hall parking lot located two blocks east of the Gloria Way Well site, at University Avenue and Bay Road. Construction worker vehicles would likely be parked along Gloria Way Well or nearby roadways.

Pipeline installation would require that traffic along Gloria Way immediately in front of the site be restricted to one lane for up to one week. In addition, the Gloria Way road right-of-way immediately in front of the site could be used for the temporary storage of construction equipment and materials during construction hours throughout the 12-month construction period. Construction equipment and materials would not be stored within the Gloria Way road right-of-way during weekends or nighttime hours. Such activities along Gloria Way would result in one-way alternating traffic flow and closure of the street would not occur.

With the exception of up to one week when the westbound (north side) travel lane on Bay Road immediately in front of the project site would be closed for pipeline installation, traffic along Bay Road would not impeded by construction activities. During the pipeline installation period (up to one week), the temporary closure of Bay Road (pertaining only to the segment adjacent to the project site) would result in requiring vehicles traveling in the westbound direction to use the existing median lane while the segment of Bay Road is closed. The use of the median lane would maintain two-way traffic flow along the road.

Construction-Related Vehicle Trips

Project construction would result in short-term increases in the traffic volumes on area roadways. The number of construction-related vehicle trips would vary each day, depending on the type of project component, construction phase, planned activity, and material needs.

Up to seven construction workers would be employed at the project site at any given time. Based on the construction hours, workers would arrive at the project site during the typical morning commute hours (7:00 a.m. and 9:00 a.m.) and depart during the typical afternoon commute hours (4:00 p.m. and 6:00 p.m.) It is assumed that construction workers would commute to and from the project site in their own vehicles on a daily basis. Construction worker commutes would generate up to seven round trips (14 one-way trips) each day.

The number of construction-related haul truck trips per day would vary depending on the type of construction activity taking place. The size (capacity) of haul trucks used by project contractor(s) could vary, but for purposes of this analysis, the capacity of haul trucks was assumed to average 9 cubic yards (CY) for transport of spoils/fill and additional materials. Given the planned pipeline construction, trenching, and transport of spoils and materials, the project would generate an estimated 200 CY of excess spoils during construction. Therefore, based on the average haul truck capacity, the project would generate a total of approximately 22 haul truck trips (44 one-way trips) over the entire 12-month period. As a result, the project would generate no more than one haul truck trip (two one-way trips) on any given weekday.

As described in Chapter 2, Project Description, construction materials and facility components (i.e., pressure filters, mixing tank, backwash holding tank, etc) would be delivered to the site at the time they are needed. Thus, the number of vehicle trips associated with materials deliveries would vary. The analysis below conservatively assumes a maximum of two truck trips (four one-way trips) associated with material deliveries each day.

Based on the assumptions described above, a maximum of 10 construction-related vehicle trips (20 one-way trips) would be generated each weekday during the 12-month construction period.

Construction Vehicle Trip Distribution

Construction-related vehicles would utilize of the various regional and local roadways to access the project site. Therefore, the proposed project facilities would generate a wide dispersion of construction traffic that would be spread over several roadways within the City limits and points beyond.

Primary access to the project site would be provided via multiple State highways (i.e., SR 109 and SR 114), Bay Road (a designated truck route), and Gloria Way. Construction vehicles traveling from points north and west of the project site would use U.S. 101, SR 84, and SR 114 to gain access to Bay Road (by way of Newbridge Street). Additionally, these vehicles could also utilize SR 109 (by way of University Avenue) to gain access to Bay Road. Vehicles traveling from points south and east of the project site would utilize U.S. 101 and SR 109 to access Bay Road (by way of University Avenue and Newbridge Street).

Operations and Maintenance Activities

Although at this time it is anticipated that the Gloria Way Well and associated facilities would be operated only part-time, the City may elect to operate the well continuously (i.e., 24 hours a day). The Gloria Way Well and associated facilities would be operated automatically; however, facility operators would conduct routine visits for inspection and maintenance activities.

Operation and Maintenance-Related Vehicle Trips

The project, once completed, would not generate a substantial amount of vehicle trips. As stated above, the project would require routine maintenance of the on-site facilities. Up to two vehicle trips (four one-way trips) associated with facility operations and maintenance would be generated each day.

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
TRANSPORTATION AND TRAFFIC — Would the project:					
TR-1	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
TR-2	Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
TR-3	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location, that results in substantial safety risks?	☐	☐	☐	☒
TR-4	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
TR-5	Result in inadequate emergency access?	☐	☒	☐	☐
TR-6	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☒	☐	☐

Impact Discussion for TR-1

Project construction would cause temporary increases in traffic volumes on area roadways, including large construction vehicles that could pose increased safety risks, and temporary delays when construction activities or staging occurs within the Gloria Way and Bay Road right-of-ways.

Access to the project site would be from Bay Road and Gloria Way via multiple State highways (i.e., SR 109, SR 114, and U.S. 101). Although construction-related traffic would vary depending on the construction activities taking place, project construction would generate a total of up to 10 roundtrips (20 one-way trips) each weekday over the 12-month construction period.

Construction worker commute trips to the project site would occur during the a.m. peak traffic hour (7:00 a.m. and 9:00 a.m.), and away from the site during the p.m. peak traffic hour (4:00 p.m. and 6:00 p.m.). Although the number of daily haul and material deliveries truck trips would be minimal (up to three roundtrips), these truck trips could be spread over the course of the day and have the potential to travel to and from the project site outside conventional commute periods. Construction-related vehicle trips would represent less than one percent of existing traffic on regional roads (e.g., SR 109, SR 114, and U.S. 101). Although construction traffic would be most concentrated on local two-lane roads (e.g., Bay Road and Gloria Way), the increased traffic volumes would remain at levels lower than the carrying capacity of those roads (which is about 10,000 to 15,000 vehicles per day). As a result, the temporary increase in traffic volumes on regional and local roadway would not have a less-than-significant impact on traffic flow conditions.

However, construction activities associated with the installation of pipelines within the Gloria Way and Bay Road right-of-ways immediately adjacent to the project site, and the associated

temporary lane closures along these portions of Gloria Way and Bay Road would disrupt existing circulation patterns and require one-way, alternating traffic flow for up to one week (5 weekdays) on each road. The temporary closure of these roadways is considered to be a significant impact.

As discussed, the City of East Palo Alto General Plan (1999) and *City of East Palo Alto Bay Access Master Plan* (2007) address vehicular circulation, public transportation, and bicycle and pedestrian travel. Increased vehicular traffic, potential increases in safety hazards, and temporary delays in the Gloria Way and Bay Road right-of-ways could conflict with the existing circulation system (including vehicles and non-motorized modes of transportation), a potentially significant impact.

Implementation of **Mitigation Measure TR-1** (**Traffic Control Plan**), which requires the development of an appropriate traffic control plan, would ensure that any adverse effects on Bay Road, Gloria Way, and the surrounding circulation system (and to users of the circulation system) would be reduced to a less-than-significant level by requiring measures to manage traffic flow and minimize safety hazards in and around the construction zone, and maintain access to public transportation and other non-motorized modes of travel.

Mitigation:

Mitigation Measure TR-1: Traffic Control Plan.

The construction contractor(s) shall be required to prepare and implement a traffic control plan to manage traffic flow around the construction zone, minimize construction-related traffic along Gloria Way and other neighborhood streets, reduce potential traffic safety hazards, and ensure adequate access for emergency responders. Development and implementation of this plan shall be coordinated with jurisdictional agencies (e.g., San Mateo County and Caltrans), as appropriate. As applicable, the traffic control plan shall conform to the California Manual on Uniform Traffic Control Devices (MUTCD), Part 6 (Temporary Traffic Control) (Caltrans, 2012c). At a minimum, the traffic control plan shall include the following elements:

- A circulation and detour plan to minimize circulation impacts on local roadways, bicycle lanes, and sideways when construction activities occur within road rights-of-way and during lane closures. Flaggers and/or signage shall be used to guide vehicles, bicyclists, and pedestrians through and/or around the construction zone.
- Designated truck routes to minimize construction truck traffic on Gloria Way and other local roadways to the extent possible.
- The requirement that construction truck-related trips be scheduled outside of peak commute hours to the extent possible.
- The requirement that construction contractors limit the duration of lane closures to the extent possible.
- Roadside safety protocols, including posting advance “Road Work Ahead” warning and speed control signs (including those informing drivers of State-legislated double fines for speed infractions in a construction zone), to provide safe traffic flow through the construction zone.

- The requirement that the City, or its construction contractor(s), provide advance notification to public transportation providers (e.g., SamTrans), local police stations, fire stations, and emergency service providers of the timing, location, and duration of construction activities, detours, and lane closures, as applicable.
- The requirement that construction contractors repair and restore affected roadway rights-of way and sidewalks to their original condition after construction is completed.

Impact Discussion for TR-2

Level of service standards are established by congestion management agencies and other jurisdictional entities to assess and regulate long-term traffic impacts due to future permanent development; the standards do not directly apply to temporary construction projects. Long-term traffic trips associated with operation of the proposed project (up to two vehicle trips, or four one-way trips, each day) would be negligible relative to existing traffic levels along roadways near the project site. Further, routine maintenance and facility operations would not necessarily require daily trips to and from the site.

There would be no substantial increase in long-term traffic trips during project operations, and any increases in traffic volumes on area roads generated by operation and maintenance of the project would not be noticeable to the average motorist. Therefore, operational traffic impacts would be less than significant.

Mitigation: None required.

Impact Discussion for TR-3

The nearest public airport is the Palo Alto Airport in Santa Clara County, about two miles southeast of the project site. Due to the nature of the proposed project, project implementation would not effect air traffic patterns nor interfere with existing air traffic. No impact would result.

Mitigation: None required.

Impact Discussion for TR-4

Project construction could cause temporary increases in traffic safety hazards for vehicles, bicycles, and pedestrians on public roadways. These potential traffic safety hazards would be attributable to increased truck traffic in general (and their slower speeds and wider turning radii) and would be greatest when large construction vehicles leaving the site access public rights-of-way (e.g., Gloria Way and Bay Road).

As described above under Impact Discussion for TR-1, the percent increase in daily traffic volumes resulting from construction traffic generated by construction activities would not be

substantial relative to the background traffic volumes on roads used to access the project site; however, haul trucks and delivery trucks could increase safety hazards and conflict with other travel modes along affected roadways. Adverse effects related to traffic safety and conflicts with other users of the affected roadways (e.g., vehicles, bicyclists, and pedestrians) during project construction would be considered potentially significant. However, implementation of **Mitigation Measure TR-1** (**Traffic Control Plan**) would reduce impacts associated with traffic safety hazards during project construction to a less-than-significant level.

Mitigation:

Mitigation Measure TR-1: Traffic Control Plan.

See Impact Discussion for TR-1, above, for description.

Impact Discussion for TR-5

Construction staging areas and construction activities would occur along specific designated areas and easements, with intermittent closure of the southbound Gloria Way travel lane and westbound Bay Road travel lane for up to one week. However, construction activities along affected roadways could result in additional impaired access to land uses (nearby residences) and cross streets (private driveways, public roadways) along Bay Road and Gloria Way for both general and emergency vehicles in the vicinity of the project site. Although access along affected roadways would be maintained for construction vehicles, local residents, and emergency vehicles during construction, in the event of an emergency, impedance or slowing of access by emergency vehicles could pose a safety hazard and is considered a potentially significant impact.

Implementation of **Mitigation Measure TR-1** (**Traffic Control Plan**) would require the City and/or its contractor(s) to notify local police and emergency responders regarding access routes to the project site in order to provide adequate response time. Implementation of the mitigation measure would reduce this construction-related impact to emergency access to a less-than-significant level.

Mitigation:

Mitigation Measure TR-1: Traffic Control Plan.

See Impact Discussion for TR-1, above, for description.

Impact Discussion for TR-6

Most project-related construction activities would not interfere with, nor disrupt access to, alternative modes of transportation. However, construction activities occurring within the Gloria

Way and Bay Road rights-of-way could adversely affect access to, or decrease the performance of, alternative transportation facilities, including sidewalks, bicycle lanes, and bus stops.

The temporary closure (up to one week) of the westbound travel lane along Bay Road immediately in front of the project site could disrupt SamTrans transit vehicles (i.e., Route 281), sidewalks, and Class II bicycle lanes along Bay Road. Similarly, temporary closure of the southbound travel lane along Gloria Way, and the intermittent use of the Gloria Way right-of-way during construction hours, could disrupt access to sidewalks and adversely affect bicycle travel along Gloria Way. Potential adverse effects on public transit, bicycle, and pedestrian facilities would be considered a potentially significant impact. However, implementation of **Mitigation Measure TR-1** (**Traffic Control Plan**) would reduce this impact to a less-than-significant level.

Project operations would have no effect on existing or planned alternative transportation facilities.

Mitigation:

Mitigation Measure TR-1: Traffic Control Plan.

See Impact Discussion for TR-1, above, for description.

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3.5 Noise

Setting

Noise Background

Several factors influence sound as it is perceived by the human ear, including the actual level of sound, the period of exposure to the sound, the frequencies involved, and fluctuation in the noise level during exposure. Noise is measured on a "decibel" scale, which serves as an index of loudness. Because the human ear cannot hear all pitches or frequencies, sound levels are frequently adjusted or weighted to correspond to human hearing. This adjusted unit is known as the "A-weighted" decibel or dBA. Further, sound is averaged over time and penalties are added to the average for noise that is generated during times, such as early morning, or late evening, that may be more disturbing to sensitive land uses.

Since excessive noise levels can adversely affect human activities (such as conversation and sleeping) and human health, federal, state, and local governmental agencies have set forth criteria or planning goals to minimize or avoid these effects. The noise guidelines are almost always expressed using one of several noise averaging methods. The most frequently used noise descriptors are summarized below:

L_{eq}: The equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

L_x: The sound level that is equaled or exceeded x percent of a specified time period. The L_{50} represents the median sound level (i.e., the noise level exceeded 50 percent of the time, or 30 minutes out of an hour).

L_{dn}: The energy average of the A-weighted sound levels occurring during a 24-hour period, and which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

CNEL: Similar to L_{dn}, the Community Noise Equivalent Level (CNEL) adds a 5-dBA "penalty" for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

Using one or more of these descriptors is a way for a location's overall noise exposure to be measured, realizing that there are specific moments when noise levels are higher (e.g., when mechanical equipment is operated in the vicinity of the noise receiver) and specific moments when noise levels are lower (e.g., when equipment is not operating in the middle of the night).

These relationships occur in part because of the logarithmic nature of sound and the decibel system. A ruler is a *linear* scale. It has marks on it corresponding to equal quantities of distance;

that is, the ratio of successive intervals is equal to one. A *logarithmic* scale is different in that the ratio of successive intervals is not equal to one. Each interval on a logarithmic scale is some common factor larger than the previous interval. A typical ratio is 10, so that the marks on the scale read: 1; 10; 100; 1,000; 10,000; etc., doubling the variable plotted on the x-axis. The human ear perceives sound in a non-linear fashion; hence, the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple arithmetic additive fashion, rather they combine logarithmically. For example, if two identical noise sources produce noise levels of 50 dB, the combined noise level would be 53 dB, not 100 dB.

Sound level naturally decreases with increased distance from the source. This basic attenuation rate is referred to as the *geometric spreading loss*. Noise from point sources, including stationary mobile sources such as idling vehicles or on-site construction equipment, attenuates (lessens) at a rate of approximately 6 dBA per doubling of distance from the source. In many cases, noise attenuation from a point source increases by 1.5 dBA from 6 dBA to 7.5 dBA for each doubling of distance to account for ground absorption and reflective wave canceling. These factors are collectively referred to as *excess ground attenuation*. The basic geometric spreading loss rate is used where the ground surface between a noise source and a receiver is reflective, such as parking lots or a smooth body of water. The excess ground attenuation rate (7.5 dBA per doubling of distance) is used where the ground surface is absorptive, such as soft dirt, grass, or scattered bushes and trees.

Vibration Background

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal and is typically expressed in units of inches per second (in/sec). The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to describe RMS. The decibel notation acts to compress the range of numbers required to describe vibration (FTA, 2006). Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

Existing Noise Conditions at Gloria Way Well Site

To quantify the existing noise environment at the project site, a 48-hour noise measurement was collected at the project site starting just after midnight on Saturday, December 29, 2012, through Sunday, December 30, 2012. The noise meter was attached to the fence along the western site boundary, adjacent to a single-family residence and away from Bay Road and Gloria Way. A summary of the noise measurement results for each of the monitored days, in terms of hourly L_{eq}, L_{50}, and L_{25} ranges, and CNEL are presented in **Table 3.5-1**.

As indicated in Table 3.5-1, the ranges for the hourly L_{eq} and L_{25} values are small, which is not typical for long-term data collected in an urban area where the dominate noise source is vehicle traffic. Typically, noise measurement data collected from urban areas like the project site tend to

TABLE 3.5-1
48-HOUR NOISE MONITORING DATA

Measurement Date	Hourly L_{eq} Range	Hourly L_{50} Range	Hourly L_{25} Range	CNEL
December 29, 2012	60 dBA – 64 dBA	47 dBA – 61 dBA	63 dBA – 64 dBA	67 dBA
December 30, 2012	60 dBA – 63 dBA	46 dBA – 60 dBA	63 dBA – 64 dBA	67 dBA

SOURCE: ESA, 2012.

reflect the considerable noise level differences that occur between daytime and nightime hours. In contrast, the hourly L_{25} data for the Gloria Way Well site indicate that throughout the monitoring period, a consistent noise level of 63 dBA or 64 dBA occurred for at least 15 minutes during each hour. In addition, approximately 33 percent of the logged data during the monitoring period were 63 dBA or 64 dBA. These data suggest that a piece of mechanical equipment was operating at regular intervals each hour during the monitoring period. Subsequent to the 48-hour monitoring period, American Water Enterprise, the facility operator contracted by the City to operate the City's municipal water supply system, confirmed that an air compressor had been operating on-site during the monitoring period. The existing pressure tank was malfunctioning and an air compressor was needed to keep the tank pressurized. This level of equipment activity and the resultant noise levels do not constitute typical conditions at the project site. Therefore, actual ambient noise levels at the project site are likely substantially lower than the measured levels identified in Table 3.5-1.

Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others are due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. People in residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, natural areas, parks and outdoor recreation areas are generally more sensitive to noise than are people at commercial and industrial establishments. Consequently, the noise standards for sensitive land uses are more stringent than for those at less sensitive uses. Existing sensitive receptors adjacent to the project site include single-family residences on adjoining parcels to the north and west, and across Bay Road to the south; multi-family residences to the east (across Gloria Way); and multi-family residences and neighborhood commercial land uses along Bay Road to the southeast and southwest.

Regulatory Framework

Regulating environmental noise is generally the responsibility of local governments. The U.S. Environmental Protection Agency (U.S. EPA), however, has published guidelines on recommended maximum noise levels to protect public health and welfare, and the State of California maintains recommendations for local jurisdictions in the General Plan Guidelines published by the Governor's Office of Planning and Research. The following summarizes the federal and State recommendations and local requirements.

Federal

Although no federal noise regulations exist, the U.S. EPA has promulgated noise guidelines (U.S. EPA, 1974). The U.S. EPA guideline recommends an L_{dn} of 55 dBA to protect the public from the effect of broadband environmental noise outdoors in residential areas and farms, and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use (U.S. EPA, 1974).

State

California Government Code Section 65302 encourages each local government entity to implement a noise element as part of its general plan. In addition, the California Governor's Office of Planning and Research has developed guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.

Local

East Palo Alto General Plan

The General Plan Noise Element of the *City of East Palo Alto General Plan* identifies noise and land use compatibility standards for various land uses (East Palo Alto, 1999). The General Plan Noise/Land Use Compatibility Matrix identifies exterior noise standards for residential land uses, including single family, multi-family, and duplexes, of 60 dB CNEL or less as "clearly compatible" and up to 70 dB CNEL or less as "conditionally acceptable."

The *Other Noise Sources* discussion of the Noise Element states that when reviewing a proposed non-residential project, noise generation and potential impacts to surrounding development will be considered, and acoustical analyses will be required for projects that will generate noise potentially affecting sensitive receptors. In addition, various policies in the City's General Plan have been adopted for the purpose of avoiding or mitigating noise impacts resulting from planned development within the City. All project-related construction and operational activities would be subject to the noise policies listed in the City's General Plan, including the following:

Noise Goal 1.0: Minimize the effects of noise through proper land use planning.

***Policy 1.1*:** Utilize noise/land use compatibility standards as a guide for future planning and development decisions.

***Policy 1.2*:** Proposed noise control measures, such as berms, walls, and sound attenuating construction in areas of new construction or rehabilitation.

Noise Goal 2.0: Minimize transportation- and non-transportation-related noise impacts.

***Policy 2.2*:** Reduce the impacts of noise-producing land uses and activities on noise-sensitive land uses.

East Palo Alto Municipal Code

In addition to General Plan policies, the proposed project would also be subject to the City's Municipal Code (East Palo Alto, 2013). Regarding construction-related noise, Section 15.04.125, *Hours of Operation*, limits construction activity to between 7:00 a.m. and 6:00 p.m. weekdays, from 9:00 a.m. to 5:00 p.m. on Saturdays, and no construction on Sundays or national holidays. Regarding long-term operations, pursuant to Municipal Code Section 8.52.320, *Exterior Noise Standards*, exterior noise levels at any single or multiple family residence, school, hospital, church, or public library are prohibited from exceeding the noise level standards as set forth in **Table 3.5-2**.

TABLE 3.5-2
EXTERIOR NOISE LEVEL STANDARDS (dBA)

Cumulative Number of Minutes in Any One Hour Time Period	Daytime (7:00 a.m. - 10:00 p.m.)	Nighttime (10:00 p.m. - 7:00 a.m.)
30	55	50
15	50*	55
5	65	60
1	70	60
0	75	70

NOTES:

*This level appears to be a mistake in the code; the correct level is likely 60 dBA.

[a] In the event the measured background noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted in five dBA increments so as to encompass the background noise level.

[b] Each of the noise level standards specified above shall be reduced by five dBA for simple tone noises, consisting primarily of speech or music, or for recurring or intermittent impulsive noises.

[c] If the intruding noise source is continuous and cannot reasonably be stopped for a period of time whereby the background noise level measured while the source is in operation shall be compared directly to the noise level standards in the table.

SOURCE: East Palo Alto, 2013.

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
NOISE — Would the project:					
NO-1	Result in exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
NO-2	Result in exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
NO-3	Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
NO-4	Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
NO-5	For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?	☐	☐	☐	☒
NO-6	For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Impact Discussion for NO-1

The proposed improvements at the Gloria Way Well site would include new noise sources; including two 50- horsepower (hp) finished water pumps enclosed in a concrete building, two 1-hp decant pumps enclosed in a concrete building, and a 40-hp emergency backup generator. As indicated in the conceptual site plan shown in **Figure 2**, the finished water pump station would likely be located approximately 15 feet from a residential fence line and the decant return pump station would be located approximately 20 feet from a residential fence line. The existing 30-hp vertical turbine well pump and the enclosed electrical transformer would be retained at the site. Although the well pump and transformer are existing equipment, operation of these pieces of equipment would increase due to the proposed increase in groundwater production (from 5 AFY under current conditions, to 420 AFY under future project operations. The existing well pump is located approximately 15 feet from the residential fence line and the electrical transformer is located approximately 40 feet from the residential property fence line.

Typical 50-hp well pumps have been documented to generate a noise level of approximately 63 dBA at a distance of 50 feet (Presidio Trust, 2002). Two 50-hp pumps operating at the same time would be expected to generate a noise level of 66 dBA at 50 feet. The proposed concrete building where the finished water pumps would be located would attenuate the outside noise levels by at least 20 dBA to approximately 46 dBA at 50 feet. At the closest residential property line 15 feet from the finished water pump station, this would equate to a noise level of up to 56 dBA. This level would result in an exceedance of the City's exterior daytime and nighttime noise standards for 30 minutes in any one-hour period, which are 55 dBA and 50 dBA, respectively. Also, the City may elect to operate the well continuously 24 hours per day (see Section 2.4.5). Therefore, assuming 24 hourly averages of 56 dBA, the CNEL and L_{dn} at the nearest residential property line would be 63 dBA and 62 dBA, respectively. These levels would exceed the City's land use compatibility standard for residential land uses of 60 dBA CNEL, as well as the U.S. EPA's guideline of 55 dBA L_{dn} to protect the public from loud outdoor noise. This would represent a significant CEQA impact.

Although the predicted operational noise levels associated with the proposed project are less than the noise levels measured at the site (see Table 3.5-1), as discussed in the Setting section above, it is assumed that the conditions at the site during the measurement period do not represent typical conditions at the site. Therefore, the noise levels identified above that would be associated with the finished water pump station may be substantially higher than ambient conditions at the site.

Noise levels at the residential property line associated with the decant return pump station would be substantially less than those that would be associated with the finished water pump station because: (1) the pumps would be only 1 hp; (2) the decant return pump station is farther from the residential property line; and (3) the line of sight between the decant return pump station and the residential property line would be blocked by the proposed mix tank (see Figure 2). The emergency backup generator could produce noise levels up to 81 dBA at 50 feet; however, with the exception of quarterly two-hour tests, the backup generator would only operate during emergency situations and would not constitute typical operational conditions at the site.

Based on the reference noise level for 50-hp pumps, it is assumed that the existing 30-hp well pump generates a noise level of approximately 60 dBA at 50 feet, which equates to approximately 70 dBA at a distance of 15 feet, which is the distance to the closest residential property line. This noise level would easily exceed the City's exterior noise standards as well as the U.S. EPA guideline to protect the public from loud outdoor noise. Although this pump currently operates occasionally, it is not operated during nighttime hours. Therefore, the increased exposure to well pump noise that would be associated with the project is considered a potentially significant impact. However, implementation of **Mitigation Measure NO-1** (**On-Site Noise Controls**) would ensure that the City designs the proposed improvements such that the combined noise levels would not exceed the City's exterior noise standards, thereby reducing the impact to a less-than-significant level.

Given the small size of the existing electrical transformer, its contribution to the combined noise level at the pump station during pumping and treating operations would be negligible.

As part of routine operations and maintenance activities, facility operators visiting the site to check pumps and treatment equipment and monitor performance could generate up to two new vehicle trips (four round trips) per day. It is also expected that one truck trip per week would be required to transport chemicals to the site. Project operations would generate a negligible increase in vehicle trips to surrounding roadways, and the associated noise increase would be less than significant.

With regard to construction-related noise, construction activities would occur on weekdays, between 7:30 a.m. and 6:00 p.m., and no nighttime or weekend construction activities would occur. Therefore, construction activities would comply with the City's required hours for operation, and there would be no construction-related impact related to conflicting with local regulations or policies.

Mitigation:

Mitigation Measure NO-1: On-Site Noise Controls.

The City shall ensure that noise levels associated with the Gloria Way Well Retrofit Project do not exceed the City's exterior noise standards at the residential property lines that border the site. Noise control techniques may include, but not be limited to: locating the existing well pump within an enclosed concrete building, use of noise walls or equivalent sound attenuation devices, and the use of pumps and equipment with special noise control specifications designed in a way to specifically achieve acceptable City noise standards.

Prior to construction, the City shall prepare a plan that describes the specific measures that will be taken in order to comply with the City's exterior noise standards. Once the proposed improvements are operational, the City shall retain an acoustical engineer to perform noise measurements at the nearest residential property lines to verify that station noise levels comply with City standards when operating 24 hours per day. In the event the station noise levels violate the standards, additional noise control techniques shall be initiated to correct the violation.

Impact Discussion for NO-2

Temporary sources of groundborne vibration and noise during construction would result from operation of conventional heavy construction equipment such graders, loaders, and loaded haul trucks. These pieces of equipment can generate vibration levels of up to 0.08 in/sec at a distance of 25 feet. However, vibration levels attenuate rapidly from the source. At a distance of 15 feet, which is the closest expected location of construction equipment to residential buildings, vibration would be as high as 0.13 in/sec.

The PPV threshold of 0.20 in/sec identified by Caltrans (2004) is used in this analysis to determine the significance of vibration impacts related to adverse human reaction, and the Federal Transit Administration (FTA) PPV threshold of 0.20 in/sec for non-engineered masonry and timber buildings is used to determine the significance of vibration impacts related to risk of architectural damage to buildings (FTA, 2006). Vibration levels at the closest residence locations would be below these thresholds. Therefore, construction-related vibration impacts would be less than significant. These vibration levels would not have the potential to cause structural damage to nearby buildings; and would be unlikely to cause an adverse human reaction at the residences in the immediate vicinity of construction activities.

Operation and maintenance of the project would not introduce any new sources of perceivable groundborne vibration to the study area. Therefore, there would be no operation-related vibration impacts. Since there would be no groundborne vibration impact, there would be no groundborne noise exposure impact. No impact would result.

Mitigation: None required.

Impact Discussion for NO-3

As described above under Impact Discussion NO-1, the noise levels that would be associated with the proposed finished water pump station and the well pump could also be substantially higher than ambient conditions at the site. However, implementation of **Mitigation Measure NO-1** (**On-Site Noise Controls**) would ensure that long-term operational noise associated with the project would not exceed the City's exterior noise standards at the residential property lines that border the site. Therefore, the impact would be reduced to a less-than-significant level.

Mitigation:

Mitigation Measure NO-1: On-Site Noise Controls.

See Impact Discussion for NO-1, above, for description.

Impact Discussion for NO-4

Construction on the project site would temporarily increase noise levels at adjacent residential land uses. Noise impacts resulting from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise generating activities, and the distance between construction noise sources and noise sensitive receptors. Construction noise impacts primarily occur when construction activities take place during noise-sensitive times of the day (early morning, evening, or nighttime hours), when the construction occurs in areas immediately adjoining noise sensitive land uses, or when construction durations last over extended periods of time.

Construction-related noise levels are normally highest during the demolition and grading phase. These phases of construction require heavy equipment that normally generates the highest noise levels over extended periods of time. Substantial noise generating construction activities, including demolition, grading, and busy construction periods, would be completed in separate phases over the period of approximately one year.

The closest noise sensitive land uses include residences immediately adjacent to the project site. Typical construction equipment (e.g., grader, backhoe, crane, etc.) generated noise levels during busy construction periods (e.g., demolition, earth moving, etc.) would range between 83 dBA to 88 dBA at a distance of 50 feet from the equipment (FTA, 2006), which would equate to between 89 dBA and 94 dBA at a distance of 50 feet from the equipment, respectively. The heavy pieces of construction equipment would likely operate between four and eight hours per day, five days a week, and given the small area of the project site, it would not be likely that more than one or two heavy pieces of construction equipment would operate at the site at any given time. Based on the close proximity of the closest sensitive receptors, construction activities would result in potentially significant short-term construction-related noise nuisance impacts. However, with implementation of **Mitigation Measure NO-2** (**Construction Noise Nuisance Control Plan**), the impact would be reduced to a less-than-significant level.

Mitigation:

Mitigation Measure NO-2: Construction Noise Nuisance Control Plan.

The following measures shall be implemented during all phases of construction to avoid construction-related noise nuisance impacts:

- The contractor will use "new technology" power construction equipment with state-of-the-art noise shielding and muffling devices. All internal combustion engines used on the project site will be equipped with adequate mufflers and will be in good mechanical condition to minimize noise created by faulty or poorly maintained engines or other components.
- Stationary noise generating equipment will be located as far as possible from sensitive receptors and will be acoustically shielded.
- The contractor will prepare a construction plan identifying the schedule for major noise generating construction activities. The construction plan will identify a procedure for coordination with adjacent residences so that construction activities can be scheduled to minimize noise disturbance.
- Designate a "disturbance coordinator" who would be responsible for responding to any complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., bad muffler, etc.) and will require that reasonable measures be implemented to correct the problem.
- Utilize construction noise barriers such as paneled noise shields, barriers, or enclosures adjacent to or around noisy equipment associated with construction activities, including grading and earthwork activities, etc. Noise control shields shall be made featuring a solid panel and a weather-protected, sound-absorptive material on the construction-activity side of the noise shield.

Impact Discussion for NO-5 and NO-6:

The City of Palo Alto Airport is located approximately 1.4 miles to the east-southeast of the project site; however, due to the nature of the project as an unmanned municipal well site, the project would not expose people residing or working in the area to excessive noise levels; therefore, there would be no impact. In addition, the project site is not within the vicinity of a private airstrip and, therefore, would not expose people residing or working in the project area to excessive noise levels; therefore, there would be no impact.

Mitigation: None required.

References – Noise

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U.S. Environmental Protection Agency (U.S. EPA), 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, March, 1974, available online: http://www.nonoise.org/library/ levels74/levels74.htm.

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3.6 Air Quality

Introduction

This section describes the existing air quality conditions in the project area and analyzes the potential short-term and long-term air quality impacts of the proposed project. Project emissions are evaluated against both state and federal air quality thresholds to comply with both CEQA and NEPA requirements.

Setting

Air quality is affected by the rate, amount, and location of pollutant emissions and the associated meteorological conditions that influence pollutant movement and dispersal. Atmospheric conditions, including wind speed, wind direction, and air temperature, in combination with local surface topography (i.e., geographic features such as mountains and valleys), determine the effect of air pollutant emissions on local air quality.

Regional Topography, Meteorology, and Climate

The Gloria Way Well site is located in the City of East Palo Alto in San Mateo County, California, which falls within the boundaries of the San Francisco Bay Area Air Basin (Basin) and is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The Basin encompasses all of San Mateo, Santa Clara, San Francisco, Alameda, Contra Costa, Marin, and Napa counties, and the southern portions of Solano and Sonoma counties. Within the Basin, seven subregions have been defined based on their unique climatology and topography.

The project site is located in the southeastern portion of the Peninsula subregion. This subregion stretches from San Jose (in the south) to the Golden Gate (in the north) and is bounded by the Pacific Ocean to the west and by the San Francisco Bay to the east. The Santa Cruz Mountains, which extend south-to-north along the peninsula, range in elevation from over 2,000 feet above mean sea level (msl) in the south to 500 feet above msl in the north near South San Francisco. Throughout the Peninsula, the annual average wind speeds range from five to 10 miles per hour (mph) with westerly prevailing winds. While there is a tendency for higher wind speeds along the western coast of the Peninsula, winds on the east side of the Peninsula can also be high in certain areas because low-lying areas in the mountain range, at San Bruno Gap and Crystal Springs Gap, commonly allow the marine layer to pass across the Peninsula. The air pollution potential is highest along the southeastern portion of the Peninsula near the project area. This is largely because the area is not usually subjected to high winds and fog, which can disperse emissions (BAAQMD, 2010a).

East Palo Alto experiences warmer temperatures than the areas located west of the Santa Cruz Mountains because the advancement of the marine layer resulting from coastal ocean upwelling and northwest winds is blocked. The average maximum annual temperature near the project area is approximately 69.3 degrees Fahrenheit (ºF) and the average minimum annual temperature is

approximately 46 ºF. Average maximum temperatures can reach as high as 78 ºF during the months of June through September, while the average minimum temperatures can reach as low as 38 ºF during the months of December and January. Average annual precipitation in East Palo Alto is approximately 15 inches, with the highest precipitation occurring during the months of January and February (WRCC, 2013).

Criteria Pollutants

The California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (U.S. EPA) currently focus on the following air pollutants as indicators of ambient air quality: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}), fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead. The pollutants are referred to as "criteria air pollutants" since they are the most prevalent air pollutants known to be injurious to human health and extensive health-effects criteria documents are available about their effects on human health and welfare. Standards have been established for each criteria pollutant to meet specific public health and welfare criteria set forth in the federal Clean Air Act (CAA). California has adopted more stringent ambient air quality standards for the criteria air pollutants (referred to as State Ambient Air Quality Standards, or state standards) and has adopted air quality standards for some pollutants for which there is no corresponding national standard.

Table 3.6-1 presents national and state ambient air quality standards for each pollutant and provides a brief discussion of their related health effects and principal sources.

Toxic Air Contaminants

Toxic air contaminants (TACs), or hazardous air pollutants (HAPs) in federal terminology, is a regulatory classification that refers to a diverse group of air pollutants that are capable of causing chronic (i.e., of long duration) and acute (i.e., severe but of short duration) adverse effects on human health. TACs include both organic and inorganic chemical substances that may be emitted from a variety of common sources including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. TACs are different than criteria pollutants in that ambient air quality standards have not been established for them, largely because there are hundreds of air toxics and their effects on health tend to be felt on a local scale rather than on a regional basis. There are hundreds of toxic air contaminants and exposure to these pollutants can cause or contribute to cancer, birth defects, genetic damage, and other adverse health effects.

According to The California Almanac of Emissions and Air Quality (CARB, 2009), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. In addition to

TABLE 3.6-1
AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	1 hour	0.09 ppm	---	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when ROG and NO_X react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
	8 hours	0.07 ppm	0.075 ppm		
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm		
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	0.100 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
	Annual Arithmetic Mean	0.030 ppm	0.053 ppm		
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	75 ppb	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	3 hours	---	0.50 ppm		
	24 hours	0.04 ppm	0.14 ppm		
	Annual Arithmetic Mean	---	0.03 ppm		
Respirable Particulate Matter (PM10)	24 hours	50 µg/m^3	150 µg/m^3	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	Annual Arithmetic Mean	20 µg/m^3	---		
Fine Particulate Matter (PM2.5)	24 hours	---	35 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NO_X, sulfur oxides, and organics.
	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3		
Lead (Pb)	30 Day Average	1.5 µg/m^3	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction (in severe cases).	*Present source:* lead smelters, battery manufacturing and recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarter	---	1.5 µg/m^3		
	Rolling 3-Month Average	---	0.15 µg/m^3		
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations)	Geothermal power plants, petroleum production and refining
Sulfates (SO_4)	24 hour	25 µg/m^3	No National Standard	Decrease in ventilatory functions; aggravation of asthmatic symptoms; aggravation of cardio-pulmonary disease; vegetation damage; degradation of visibility; property damage.	Industrial processes.
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	No National Standard	Reduces visibility, reduced airport safety, lower real estate value, and discourages tourism.	See $PM_{2.5}$.

NOTE: ppm = parts per million; ppb = parts per billion; µg/m3 = micrograms per cubic meter.

SOURCE: CARB, 2012.

diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Existing Air Quality Conditions in the Project Area

BAAQMD's regional monitoring network measures the ambient concentrations of criteria pollutants. Existing levels of air quality in the project area can be inferred from ambient air quality measurements conducted by BAAQMD at the nearest monitoring station to the project site. The nearest air quality monitoring station is the Redwood City Monitoring Station (897 Barron Avenue in Redwood City), located approximately 3.5 miles west-northwest of the project site. The Redwood City station monitors ozone, CO, NO_2, and $PM_{2.5}$. **Table 3.6-2** shows the most recent three-year (2009 through 2011) summary of air quality data monitored at the Redwood City Monitoring Station. The data are compared to the California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS).

TABLE 3.6-2
AIR QUALITY DATA SUMMARY (2009 – 2011)

Pollutant	Standard	Monitoring Data by Year 2009	2010	2011
Ozone				
Highest 1 Hour Average (ppm)		0.087	0.113	0.076
Days over State Standard	0.09 ppm	0	2	0
Highest 8 Hour Average (ppm)		0.063	0.077	0.062
Days over National Standard	0.075 ppm	0	1	0
Days over State Standard	0.070 ppm	0	1	0
Carbon Monoxide				
Highest 8-Hour Average (ppm)		1.76	1.72	1.67
Days over National Standard	9 ppm	0	0	0
Days over State Standard	9.0 ppm	0	0	0
Nitrogen Dioxide				
Highest 1 Hour Average (ppm)		0.056	0.059	0.056
Days over National Standard	0.100 ppm	0	0	0
Days over State Standard	0.18 ppm	0	0	0
Annual Average (ppm)		0.012	0.012	0.012
Days over National Standard	0.053 ppm	0	0	0
Days over State Standard	0.030 ppm	0	0	0
Particulate Matter ($PM_{2.5}$)				
Highest 24 Hour Average ($\mu g/m^3$)		34.2	36.5	39.7
Days over National Standard (measured)	35 $\mu g/m^3$	0	1	1
National Annual Average ($\mu g/m^3$)[a]	12 $\mu g/m^3$	8.6	8.3	8.7
State Annual Average ($\mu g/m^3$)	12 $\mu g/m^3$	*	*	8.7

NOTES:
ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
* = Insufficient data available to determine the value.

[a] On December 14, 2012, the U.S. EPA revised the primary annual $PM_{2.5}$ standard to12 $\mu g/m^3$.

SOURCE: CARB, 2013.

As shown in Table 3.6-2, the state 1-hour ozone standard was exceeded twice in 2010, with no measured exceedances in 2009 or 2011; the state 8-hour ozone standard was exceeded once in 2010, with no measured exceedances in 2009 or 2011; and the federal 8-hour standard was exceeded once in 2010, with no measured exceedances in 2009 or 2011. The $PM_{2.5}$ 24-hour federal standard was exceeded once both in 2010 and 2011, with no measured exceedances in 2009. There were no measured exceedances of the CO and NO_2 federal and state standards during the three-year period.

Both CARB and U.S. EPA use the air quality monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify the areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of nonattainment-transitional, which is given to nonattainment areas that are progressing and nearing attainment.

The Basin is currently classified as a federal nonattainment area for ozone (8-hour) and $PM_{2.5}$, a federal attainment/maintenance area for CO and SO_2, and a federal unclassified area for NO_2 and PM_{10} (BAAQMD, 2013). The Basin is classified as a state nonattainment area for ozone (1-hour and 8-hour), PM_{10}, and $PM_{2.5}$, and an attainment area for CO, NO_2, and SO_2 (BAAQMD, 2013).

Sensitive Receptors

Land uses such as schools, children's daycare centers, hospitals, and convalescent homes are considered to be more sensitive to poor air quality than the general public because the population groups associated with these uses have increased susceptibility to respiratory distress. In addition, residential uses are considered more sensitive to air quality conditions than commercial and industrial uses, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational land uses are considered moderately sensitive to air pollution. Exercise places a high demand on respiratory functions, which can be impaired by air pollution, even though exposure periods during exercise are generally short. In addition, noticeable air pollution can detract from the enjoyment of recreation.

Sensitive receptors in the project vicinity include single-family residences located on adjacent parcels to the west and north of the project site, and multi-family residential land uses to the south (across Bay Road) and east (across Gloria Way). The Creative Montessori Learning (1425 Bay Road) and Magnolia Head Start of East Palo Alto (1395 Bay Road) preschools are located along Bay Road approximately 600 feet and 800 feet west of the project site, respectively. Cesar Chavez Elementary School is located approximately 1,100 feet northwest of the project site at 2450 Ralmar Avenue.

Regulatory Framework

U.S. EPA

Criteria Air Pollutants

At the federal level, U.S. EPA has been charged with implementing national air quality programs. U.S. EPA's air quality mandates are drawn primarily from the CAA, which was enacted in 1970. The most recent major amendments to the CAA were made by Congress in 1990. The CAA requires U.S. EPA to establish NAAQS. U.S. EPA has established primary and secondary NAAQS for the following "criteria air pollutants": ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. Table 3.6-1 shows the NAAQS for these pollutants.

The CAA also requires each state to prepare an air quality control plan, referred to as a state implementation plan (SIP). The CAA Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies. U.S. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and to determine whether implementing the SIPs will achieve air quality goals. If U.S. EPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary sources of air pollution in the air basin.

U.S. EPA's primary role at the state level is to oversee state air quality programs. U.S. EPA sets federal vehicle and stationary source emissions standards and provides research and guidance in air pollution programs.

Hazardous Air Pollutants

U.S. EPA has programs for identifying and regulating HAPs. Title III of the CAAA directed U.S. EPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP may differ for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (tpy) of any HAP or more than 25 tpy of any combination of HAPs; all other sources are considered area sources. The emissions standards are to be promulgated in two phases. In the first phase (1992–2000), U.S. EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring maximum achievable control technology (MACT). For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), U.S. EPA is required to promulgate health-risk-based emissions standards, where deemed necessary, to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required U.S. EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions of, at a minimum, benzene and formaldehyde.

Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, the CAAA requires the use of reformulated gasoline in select areas that have the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

CARB

Criteria Air Pollutants

CARB oversees air quality planning and control throughout California. CARB is responsible for coordination and oversight of state and local air pollution control programs in California and for implementation of the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, requires CARB to establish the California Ambient Air Quality Standards (CAAQS). CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. Applicable CAAQS are shown in Table 3.6-1.

The CCAA requires all local air districts in the state to endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts shall focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

Among CARB's other responsibilities are overseeing compliance by local air districts with California and federal laws; approving local air quality plans; submitting SIPs to U.S. EPA; monitoring air quality; determining and updating area designations and maps; and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

Toxic Air Contaminants

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807 [Chapter 1047, Statutes of 1983]) and the Air Toxics Hot Spots Information and Assessment Act (Hot Spots Act) (AB 2588 [Chapter 1252, Statutes of 1987]). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and adopted U.S. EPA's list of HAPs as TACs. Most recently, diesel PM was added to the CARB list of TACs. Once a TAC is identified, CARB then adopts an airborne toxics control measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technology for Toxics (TBACT) to minimize emissions.

The Air Toxics Hot Spots Information and Assessment Act requires existing facilities emitting toxic substances above a specified level to prepare a toxic-emission inventory, prepare a risk

assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

BAAQMD

Criteria Air Pollutants

BAAQMD attains and maintains air quality conditions in the Basin through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. BAAQMD duties include the preparation of plans for attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. BAAQMD also inspects stationary sources of air pollution and responds to citizen complaints; monitors ambient air quality and meteorological conditions; and implements programs and regulations required by the CAA, CAAA, and CCAA.

Authority to Construct

BAAQMD requires any person or facility that puts in place, builds, erects, installs, modifies, modernizes, alters or replaces any article, machine, equipment or other contrivance, the use of which may cause, reduce or control the emission of air contaminants, to obtain written authorization from BAAQMD in the form of an Authority to Construct permit (unless the source is specifically excluded or exempt from permit requirements). BAAQMD's permit process is a pre-construction review and approval process. BAAQMD's review is conducted after the equipment is designed, but before it is installed.

Permit to Operate

After an Authority to Construct permit has been issued and construction is complete, a Permit to Operate is required to verify that the permitted equipment performs as required. The Permit to Operate must be renewed annually.

Equipment Registration

The BAAQMD operates a registration process program for the several types of equipment, including industrial, institutional, and commercial boilers, steam generators, and process heaters and portable equipment (PERP). The registration process allows for these types of equipment to operate without a Permit to Operate, provided the equipment meets the published regulatory criteria. These registrations must be renewed periodically on a schedule set forth by BAAQMD.

Air Quality Management Plan

Under the CCAA, BAAQMD is required to develop an air quality attainment plan for non-attainment criteria pollutants within the air district. The Basin is classified as a serious non-attainment area for the 1-hour ozone standard. The "serious" classification triggers various plan submittal requirements and transportation performance standards. One such requirement is that BAAQMD update its Clean Air Plan every three years to reflect progress in meeting the air

quality standards and to incorporate new information regarding the feasibility of control measures and new emission inventory data. The Bay Area's record of progress in implementing previous measures must also be reviewed. The plans for the Basin are prepared with the cooperation of the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG). On September 15, 2010, the BAAQMD adopted the most recent revision to the Clean Air Plan - *the Bay Area 2010 Clean Air Plan* (2010 CAP). The 2010 CAP serves to:

- Update the *Bay Area 2005 Ozone Strategy* in accordance with the requirements of the CCAA to implement "all feasible measures" to reduce ozone;
- Consider the impacts of ozone control measures on particulate matter, air toxics, and greenhouse gases in a single, integrated plan;
- Review progress in improving air quality in recent years; and
- Establish emission control measures to be adopted or implemented in the 2010–2012 timeframe (BAAQMD, 2010b).

Toxic Air Contaminants

At the local level, air pollution control or management districts may adopt and enforce CARB control measures. BAAQMD's Regulation 2, Rule 5 (New Source Review of Toxic Air Contaminants) applies preconstruction permit review to new and modified sources of TACs. Under this rule, a new or modified source of TACs that is required to have an authority to construct or permit to operate pursuant to BAAQMD's Regulation 2, Rule 1 are required to be reviewed in order to evaluate potential public exposure and health risk, to mitigate potentially significant health risks resulting from these exposures through implementation of TBACT, and to provide net health risk benefits by improving the level of control when existing sources are modified or replaced. Additionally, new and modified sources with HAP emissions may also be subject to the MACT requirement of Regulation 2, Rule 2, Section 31, which serves to implement the federal New Source Review and Prevention of Significant Deterioration requirements. Furthermore, BAAQMD's Regulation 11 (Hazardous Pollutants) also serves to reduce emissions from sources of TACs by setting emission and/or performance standards for hazardous pollutants such as benzene and hexavalent chromium.

City of East Palo Alto General Plan

The *City of East Palo Alto General Plan* (1999) addresses air quality in the Conservation and Open Space Element. The following goal and policies pertain to air quality:

Conservation/Open Space Goal 4: Improve air quality.

***Policy 4.1*:** Cooperate with the Bay Area Association of Governments and the Bay Area Air Quality Management District in their efforts to implement the regional Air Quality Management Plan.

***Policy 4.2*:** Cooperate and participate in regional air quality management planning, programs and enforcement measures.

***Policy 4.3*:** Implement land use and economic development policies aimed at achieving a greater balance between jobs and housing in East Palo Alto.

Analytical Approach and Methodology

U.S. EPA General Conformity Rule

To regulate the emission levels resulting from a project, federal actions located in nonattainment areas are required to demonstrate compliance with the General Conformity Rule. The Basin is currently classified as a marginal federal nonattainment area for ozone (8-hour) and $PM_{2.5}$ (U.S. EPA, 2012). Since the Gloria Way Well site is located within a nonattainment area, a General Conformity Rule applicability analysis was conducted.

Section 93.153 of the General Conformity Rule sets applicability requirements for projects through establishment of *de minimis* levels for annual criteria pollutant emissions. These *de minimis* levels are set according to criteria pollutant nonattainment area designations. For projects below the *de minimis* levels, a full conformity determination is not required. Those at or above the *de minimis* levels are required to perform a Conformity Determination as established in the Rule.

The *de minimis* threshold for marginal ozone nonattainment areas is 100 tons per year (tpy) for oxides of nitrogen (NOx) and 50 tpy for volatile organic compounds (VOCs) or reactive organic compounds (ROGs), both of which are ozone precursors.[1] The *de minimis* level for $PM_{2.5}$ is 100 tpy.

BAAQMD 1999 CEQA Guidelines

As the generation of construction emissions is often temporary in nature, BAAQMD's approach to CEQA analyses of construction air quality impacts is to emphasize implementation of effective and comprehensive control measures rather than detailed quantification of emissions (BAAQMD, 1999). As such, if all of the BAAQMD's applicable PM_{10} control measures for construction activities are implemented at a construction site, then air pollutant emissions from construction activities would be considered a less than significant impact. If all of BAAQMD's appropriate control measures are not implemented, then construction impacts would be considered to be significant (unless the Lead Agency provides a detailed explanation as to why a specific measure is unnecessary or not feasible).

With respect to a project's operational emissions, BAAQMD has defined the following thresholds shown in **Table 3.6-3**.

In addition, the 1999 BAAQMD CEQA Guidelines also requires that localized carbon monoxide concentrations be estimated for projects in which: (1) vehicle emissions of CO would exceed 550 pounds (lbs)/day; (2) project traffic would impact intersections or roadway links operating at

[1] While both ROGs and VOCs refer to compounds of carbon, ROG is a term used by CARB and is based on a list of exempted carbon compounds determined by CARB. VOC is a term used by U.S. EPA and is based on U.S. EPA's own exempt list.

TABLE 3.6-3
BAAQMD REGIONAL OPERATIONAL AIR QUALITY SIGNIFICANCE THRESHOLDS

Pollutant	Ton/year	Pound/day
Reactive Organic Gases (ROG)	15	80
Oxides of Nitrogen (NO_X)	15	80
Respirable Particulate Matter (PM_{10})	15	80
TACs	Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million. Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index greater than 1 for the MEI.	

SOURCE: BAAQMD, 1999.

Level of Service (LOS) D, E, or F or would cause LOS to decline to D, E or F; or (3) project traffic would increase traffic volumes on nearby roadways by 10 percent or more (unless the increase in traffic volume is less than 100 vehicles per hour).

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
AIR QUALITY — Would the project:					
AQ-1	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
AQ-2	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
AQ-3	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
AQ-4	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
AQ-5	Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Impact Discussion for AQ-1

The 2010 CAP serves to define a control strategy that BAAQMD and its partners will implement to: (1) reduce emissions and decrease ambient concentrations of harmful pollutants; (2) safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily impacted by air pollution; and (3) reduce

greenhouse gas (GHG) emissions to protect the climate (CARB, 2010). The project, which involves retrofitting an existing groundwater production well that is currently operational, would only generate temporary construction emissions at the project site and once operational, would not result in the generation of any pollutant emissions as the production well would continue to operate on electricity. While a 40-horsepower gasoline-powered emergency backup generator would be a component of the project, this generator would only be used as a temporary backup power supply during power outages. The project would not introduce a new land use at the project site that has not been accounted for by the City and would not result in or induce population growth within the City. Thus, the project would not conflict with or obstruct the implementation of the 2010 CAP by BAAQMD. This impact would be less than significant.

Mitigation: None required.

Impact Discussion for AQ-2

Construction Emissions

Construction activities associated with the project would include vegetation clearing, site grading and excavation, concrete work for foundations, construction of the pump buildings and the electrical/chemical building, installation of treatment facilities, installation of pipelines, street repaving, and disposal of construction waste and debris. The pressure filters, mixing tank, and backwash holding tank would be prefabricated and hauled to the project site at the time of installation. Project construction activities would generate emissions of dust, fumes, equipment exhaust, and other air contaminants. Construction activities involving vegetation clearing and site grading would primarily generate PM_{10} emissions. Mobile source emissions (use of diesel-fueled equipment onsite, and traveling to and from the site) would primarily generate NOx emissions. Asphalt paving would primarily result in the release of ROG emissions. The amount of emissions generated on a daily basis would vary, depending on the intensity and types of construction activities occurring at the same time. Construction of the project is anticipated to occur over a 12-month period, with commencement in early 2014 and completion in early 2015.

For the purpose of conducting a General Conformity Rule applicability analysis in order to determine if construction air quality impacts would be significant, the total annual construction emissions for the project during each year of construction were estimated using CalEEMod, which is designed to model construction emissions for land use development projects based on building size, land use and type, and disturbed acreage, and allows for the input of project-specific information. For ozone, emissions have been estimated for the ozone precursor pollutants NOx and ROGs. The modeled annual construction emissions for the project are shown in **Table 3.6-4**.

As shown in Table 3.6-4, the maximum annual construction emissions generated by the project over the course of the 12-month construction schedule would not exceed the *de minimis* levels for ozone precursors ROG and NOx, and $PM_{2.5}$. As the project's annual construction emissions are well below *de minimis* levels, a full conformity determination is not required by U.S. EPA.

TABLE 3.6-4
ESTIMATED PROJECT CONSTRUCTION EMISSIONS (TONS/YEAR)

Construction Year	ROG	NOx	$PM_{2.5}$
2014	0.32	2.12	0.14
2015	0.09	0.59	0.04
De minimis levels	50	100	100

SOURCE: ESA, 2013.

The BAAQMD 1999 CEQA Guidelines do not require the quantification of construction emissions to assess a project's construction phase impacts, but rather emphasizes the implementation of effective and comprehensive dust control measures. For construction on fewer than four acres, BAAQMD calls for implementation of basic control measures. By implementing all the applicable measures indicated by BAAQMD, particulate matter emissions from project construction activities would be considered less than significant. Moreover, these basic control measures in combination with additional feasible measures identified by BAAQMD for sites that are located near sensitive receptors would reduce any potential dust impacts to nearby residents during any of the project's construction phases. **Mitigation Measure AQ-1 (BAAQMD Basic Construction Measures)**, below, requires implementation of measures that would reduce the impacts of particulate matter emissions during construction to a less than significant impact.

Mitigation:

Mitigation Measure AQ-1: BAAQMD Basic Construction Measures.

During construction, the City shall require the construction contractor(s) to implement the following control measures:

- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.
- Pave, apply water three times daily, or as needed to sufficiently reduce dust emissions, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.

- Limit the area subject to excavation, grading and other construction activity at any one time.

Operational Emissions

During project operations, the Gloria Way Well would be electrically-powered and would operate automatically, with only routine visits by facility operators to check pumps and treatment equipment and monitor performance. Additionally, treatment chemicals would be delivered about once a week to the project site. Given the minimal operational vehicle trips the project would generate, which would be much less than the daily construction worker trips to the project site during project construction, the resulting vehicle emissions would be negligible and would not exceed BAAQMD's daily emission threshold of 80 lbs/day for ROG, NOx, and PM_{10}. As the project's annual operational emissions would be much lower than the project's annual construction emissions, the U.S. EPA's *de minimis* levels for annual ROG, NOx, and $PM_{2.5}$ emissions would also not be exceeded. Thus, impacts associated with the project's operational criteria pollutant emissions would be less than significant.

Further, the minimal increase in daily vehicle trips (up to two trips, or four roundtrips) generated during project operations would only marginally contribute to localized carbon monoxide impacts at any one intersection in the project area. Therefore, operational impacts related to carbon monoxide concentrations along intersections affected by project-related vehicular traffic would be less than significant.

Mitigation: None required.

Impact Discussion for AQ-3

In accordance with the BAAQMD's 1999 CEQA Guidelines, a cumulative impact analysis for projects that do not individually have significant operational air quality impacts should be based on an evaluation of the consistency of the project with the local general plan and of the general plan with the regional air quality plan (BAAQMD, 1999). If a project is proposed in a city or county with a general plan that is consistent with the most current Clean Air Plan and the project is consistent with that general plan (i.e., it does not require a general plan amendment), then the project would not have a significant cumulative and no further analysis regarding cumulative impacts is necessary.

As discussed previously, the Conservation and Open Space Element of the City's General Plan contains an air quality component that established goals and policies to reduce pollutant levels in the City through stationary source, mobile source, transportation and land use control measures, and energy conservation measures. As such, the City's General Plan is consistent with the goals of the 2010 CAP. The project, which consists of improvements to existing water supply facilities

and infrastructure, would not introduce a new land use to the project site nor require a general plan amendment. Therefore, the project would not contribute to a cumulative air quality impact.

Furthermore, with respect to cumulative health risks, operation of the project would not result in the release of any substantial levels of pollutants or TACs as the groundwater production well would be electrically-powered. While a gasoline-powered emergency backup generator would be located at the project site, this generator would only be used during temporary power outages. As such, project operations would not generate substantial levels of criteria pollutants or TACs. Additionally, the only other existing stationary emissions within 1,000 feet of the project site is County of San Mateo Facility (Plant ID#: 14872), located approximately 750 feet east of the project site at the intersection of Bay Road and University Avenue. The cancer risk associated with this facility is 0.00018 in a million (BAAQMD, 2012). Given the low health risk associated with this facility, cumulative pollutant emissions generated by operation of this facility and the proposed project would not result in cumulatively considerable health impacts on the nearby community. Thus, cumulative health risks would be less than significant.

Mitigation: None required.

Impact Discussion for AQ-4

Project construction would result in short-term emissions of diesel PM, which is a TAC. The exhaust of off-road heavy-duty diesel equipment would emit diesel PM during site preparation (e.g., excavation, grading, and vegetation clearing); paving; installation of utilities, materials transport and handling; and other miscellaneous activities. BAAQMD has not adopted a methodology for analyzing such impacts and has not recommended that health risk assessments be completed for construction-related emissions of TACs.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., the potential exposure to TACs to be compared to applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period or duration of activities associated with the project.

The 12-month project construction period would be much less than the 70-year period used for risk determination. Because off-road heavy-duty diesel equipment would be used only temporarily, and because the highly dispersive properties of diesel PM would result in further reductions in exhaust emissions, project construction would not expose sensitive receptors to substantial emissions of TACs.

There would also be no sources of TACs from project operations of the project because the Gloria Way Well would be electrically-powered and no significant sources of TAC would be located onsite. The emergency backup generator that would be used during temporary power outages would also be gasoline-powered rather than diesel-powered.

Overall, impacts associated with TACs resulting from construction and operation of the project would be less than significant.

Mitigation: None required.

Impact Discussion for AQ-5

During construction of the proposed project, exhaust from heavy construction equipment may produce discernible odors typical of most construction sites. Such odors would be a temporary source of nuisance to adjacent uses, but would not affect a substantial number of people. As odors associated with project construction would be temporary and intermittent in nature, the odors would not be considered to be a significant environmental impact. Therefore, impacts associated with objectionable odors would be less than significant.

According to the BAAQMD 1999 CEQA Guidelines, land uses associated with odor complaints typically include wastewater treatment plants, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical and fiberglass manufacturing facilities, painting/coating operations (e.g., auto body shops), rendering plants, and coffee roasters (BAAQMD, 1999). The proposed project does not include any land uses identified by BAAQMD as being associated with odors. Thus, no impacts related to objectionable odors are anticipated.

Mitigation: None required.

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3.7 Greenhouse Gas Emissions

Setting

Climate Change Overview

Various gases in the earth's atmosphere, classified as greenhouse gas (GHGs), play a critical role in determining its surface temperature. Solar radiation enters earth's atmosphere from space, and a portion of the radiation is absorbed by the earth's surface. Earth re-radiates this energy back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation (that otherwise would have escaped back into space) is now retained in the atmosphere, and results in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth. Without the greenhouse effect, the earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), chlorofluorocarbons (CFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Much of the scientific literature suggests that human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of earth's climate, known as global climate change or global warming. While there is some debate regarding this issue, it is unlikely that global climate change of the past 50 years can be explained without contribution from human activities (IPCC, 2007).

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration.

Similarly, impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and toxic air contaminants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; however, it is clear that the quantity is enormous, and no single project would measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climates.

Greenhouse Gas Emission Sources

According to much of the scientific literature on this topic, emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural sectors. In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CARB, 2010). Emissions of CO_2 are byproducts of fossil fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. N_2O is also largely attributable to agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution, respectively, and are two of the most common processes of CO_2 sequestration.

California is the 12th to 16th largest emitter of CO_2 in the world (CEC, 2006). California produced 478 million gross metric tons of CO_2 equivalent (CO_2e) in 2008 (CARB, 2010). CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. Expressing emissions in CO_2e takes the contributions to the greenhouse effect of all GHG emissions and converts them to the equivalent effect that would occur if only CO_2 were being emitted. This measurement, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Appendix C, Calculation References, of the General Reporting Protocol of the California Climate Action Registry (CCAR, 2009), 1 ton of CH_4 has the same contribution to the greenhouse effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2.

Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2008, accounting for 37 percent of total GHG emissions in the state (CARB, 2010). This sector was followed by the electric power sector (including both in-state and out-of-state sources) (25 percent) and the industrial sector (20 percent) (CARB, 2010).

Regulatory Framework

Federal Clean Air Act

The federal CAA requires U.S. EPA to define national ambient air quality standards to protect public health and welfare in the U.S. The CAA does not specifically regulate GHG emissions; however, on April 2, 2007 the U.S. Supreme Court in *Massachusetts v. U.S. Environmental Protection Agency*, determined that GHGs are pollutants that can be regulated under the CAA. Currently, there are no federal regulations that establish ambient air quality standards for GHGs.

On December 7, 2009, U.S. EPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). The Endangerment Finding is based on Section 202(a) of the CAA, which states that the U.S. EPA Administrator should regulate and develop standards for "emission[s] of air pollution from any class or classes of

new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The rule addresses Section 202(a) in two distinct findings. The first addresses whether the concentrations of the six key GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations. The second addresses whether the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and, therefore, contribute to the threat of climate change.

The U.S. EPA Administrator that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wildfires, droughts, sea level rise, higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The U.S. EPA Administrator also found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. U.S. EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHGs fit within the CAA definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but, rather, allow U.S. EPA to finalize the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.

Specific GHG regulations that U.S. EPA has adopted to-date are as follows:

> **40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule.** This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO_2e emissions per year (U.S. EPA, 2011). Additionally, reporting of emissions is required for owners of SF6- and PFC-insulated equipment when the total nameplate capacity of these insulating gases is above 17,280 pounds.
>
> **40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule.** U.S. EPA recently mandated to apply Prevention of Significant Deterioration (PSD) requirements to facilities whose stationary source CO_2e emissions exceed 75,000 tons per year (U.S. EPA, 2010).

California Executive Order S-3-05

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which commits the state to the following GHG reduction goals:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

In response to the Executive Order, the Secretary of the California Environmental Protection Agency created the Climate Action Team (CAT), which, in March 2006, published the Climate Action Team Report to Governor Schwarzenegger and the Legislature (the "2006 CAT Report"). The 2006 CAT Report identifies a recommended list of strategies that the State could pursue to reduce climate change GHG emissions. These are strategies that could be implemented by various State agencies to achieve the Governor's reduction goals.

Global Warming Solutions Act (Assembly Bill 32)

In 2006, California passed the California Global Warming Solutions Act (Assembly Bill 32 [AB 32], as codified in California Health and Safety Code Division 25.5, Sections 38500, et seq.), which requires CARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020. To achieve this goal, AB 32 mandates that CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce statewide GHG emissions from stationary sources, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved.

California Climate Change Scoping Plan

As a central requirement of AB 32, CARB was assigned the task of developing the *California Climate Change Scoping Plan* (Scoping Plan) that outlines the state's strategy to achieve the 2020 GHG emissions limit. The first Scoping Plan, developed by CARB in coordination with CAT, was published in October 2008 and subsequently adopted in December 2008. The 2008 Scoping Plan proposed a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce the state's dependence on oil, diversify the state's energy sources, save energy, create new jobs, and enhance public health. Per the 2008 Scoping Plan, the 2020 target of 427 million metric tons (MMT) CO_2e requires the reduction of 169 $MMTCO_2e$, or approximately 28.4 percent, from the state's projected 2020 business-as-usual (BAU) emissions level of 596 $MMTCO_2e$. However, CARB has discretionary authority to seek greater reductions in more significant and growing GHG sectors, such as transportation, as compared to other sectors that are not anticipated to significantly increase emissions. In August 2011, the Scoping Plan was re-adopted by CARB. The 2011 Scoping Plan includes the *Final Supplement to the Scoping Plan Functional Equivalent Document,* which updates the 2020 emission projections based on current economic forecasts. Considering the updated 2020 BAU estimate of 507 $MMTCO_2e$, a 16 percent reduction below the estimated BAU levels would be necessary to return to 1990 levels by 2020 (CARB, 2011).

Bay Area 2010 Clean Air Plan

The Bay Area Air Quality Management District (BAAQMD) regulates regional GHG emissions through the *Bay Area 2010 Clean Air Plan* (2010 CAP). The 2010 CAP provides a comprehensive plan to improve Bay Area air quality and reduce GHG emissions. The following aspects of the 2010 CAP serve to reduce GHG emissions:

- Updates to the Bay Area 2005 Ozone Strategy requiring that all feasible measures be implemented to reduce ozone; and
- Consideration of the impacts of ozone control measures on particulate matter, air toxics, and GHGs in a single, integrated plan (BAAQMD, 2010).

City of East Palo Alto General Plan

The *City of East Palo Alto General Plan* (1999) does not address GHG emissions and climate change. However, some of the goals and policies pertaining to air quality in the Conservation and Open Space Element would also serve to reduce GHG emissions.

> **Conservation/Open Space Goal 4:** Improve air quality.
>
> > ***Policy 4.1*:** Cooperate with the Bay Area Association of Governments and the Bay Area Air Quality Management District in their efforts to implement the regional Air Quality Management Plan.
> >
> > ***Policy 4.2*:** Cooperate and participate in regional air quality management planning, programs and enforcement measures.

City of East Palo Alto Climate Action Plan

The *City of East Palo Alto Climate Action Plan* establishes 23 discrete measures to reduce the City's GHG emissions through more efficient buildings, smarter transportation and land-use strategies, better waste management, and a more sustainable municipal government. The Plan includes an inventory of GHG emissions within the City of East Palo Alto for the base year of 2005, thereby providing a foundation by which the City can measure its progress towards achieving a 15 percent reduction in GHG emissions below 2005 levels by 2020. The inventory includes a BAU forecast of GHG emissions for 2020, which enables the City to estimate the amount of emissions reductions needed to meet its goal.

The GHG reduction measures and actions for the City are structured around four general categories of GHG emissions:

1. Energy use in buildings (commercial/industrial and residential)
2. Transportation and land use
3. Waste
4. Municipal operations

The first three categories focus on programs and actions to influence the behavior of households and businesses in the community. Municipal operations are included as a separate category that encompasses City facilities, fleet, and waste operations (City of East Palo Alto, 2011).

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
GREENHOUSE GAS EMISSIONS — Would the project:					
GHG-1	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
GHG-2	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Impact Discussion for GHG-1

The proposed project would contribute to global climate change as a result of GHGs emitted during project construction and operation. The majority of the GHG emissions associated with the project would be generated during construction, which would involve the operation of diesel-powered construction equipment at the project site. These GHG emissions would be temporary and would cease once the project's construction activities have been completed. Project construction is anticipated to occur over a 12-month period.

Most GHG emissions associated with project operations would result from the consumption of electricity to operate the water pumping system. While GHG emissions would also be generated from vehicle trips associated with weekly chemical deliveries to the project site and routine site visits by facility operators for maintenance and inspection activities, these vehicle trips would be minimal and the GHG emissions generated would be negligible.

GHG emissions that would be generated during construction and operation of the proposed project were estimated using the California Emissions Estimator Model (CalEEMOd), a statewide land use emissions computer model designed to quantify criteria pollutant and GHG emissions. Based on conservative assumptions regarding construction equipment and disturbance, an estimated 307 metric tons of carbon dioxide equivalent (CO2e) would be generated during the 12-month construction period. GHG emissions associated with project operations were estimated to be 195 metric tons of CO2e per year. Operational emission estimates are based on the total horsepower for all pumps and the conservative assumption that the Gloria Way Well and associated facilities would be operated year round, 24 hours per day, 7 days a week (ESA, 2013).

Per the Council on Environmental Quality (CEQ), projects that are subject to NEPA environmental review should be further assessed for their GHG impacts if their GHG emissions meet or exceed 25,000 metric tons of CO_2e per year. Since the proposed project's would generate approximately 307 and 195 metric tons of CO_2e during the 12-month construction period, and annually during operations, respectively, the proposed project would not be classified as a major source of GHG emissions. This impact is less than significant.

Mitigation: None required.

Impact Discussion for GHG-2

The proposed project consists of improvements to existing water supply facilities and infrastructure at the project site. The *City of East Palo Alto Climate Action Plan* promotes water efficiency through education and outreach, and the inclusion of a requirement in the City building code to require a specific percentage increase in water efficiency for new construction (City of East Palo Alto, 2011). Although the project would serve to increase the amount of groundwater that is currently pumped from the Gloria Way Well, the additional water supply would be used to assist the City in meeting projected near-term water supply deficits and accommodating planned growth under the adopted *City of East Palo Alto General Plan* (1999) and *Specific Plan for the Ravenswood / 4 Corners Transit-Oriented Development* (2012). The project would not introduce a new land use at the project site that has not been accounted for by the City and would not result in or induce population growth not already planned by the City. Additionally, all of the pumps operated at the project site would be electrically powered, and would not result in the direct release of GHG emissions.

The City will continue to promote water efficiency through education and outreach (e.g., webpage, billboards, and mailers) to the City's residents in accordance with its Climate Action Plan. Residents will be educated and informed about the availability of statewide efficiency programs that provide rebates for water-efficient fixtures, and how upgrading to water-efficient appliances and fixtures can greatly reduce water consumption, thereby reducing home energy use. Furthermore, as part of California's Renewables Portfolio Standard, all retail sellers of electricity, including Pacific Gas & Electric, the local electrical power provider, will be required to serve 33 percent of their load with renewable energy by 2020. Thus, overall, implementation of the project would not conflict with or obstruct the implementation of the City's Climate Action Plan, and this impact would be less than significant.

Mitigation: None required.

References – Greenhouse Gas Emissions

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Environmental Science Associates (ESA), 2013. CalEEEMod Results for the Gloria Way Well Retrofit Project. January 10, 2013.

Intergovernmental Panel on Climate Change (IPCC), 2007. *Climate Change 2007, Working Group III Report, Mitigation of Climate Change*. Geneva, Switzerland.

United States Environmental Protection Agency (U.S. EPA), 2010. *Final Rule: Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule – Factsheet*. Available online at: http://www.epa.gov/NSR/documents/20100413fs.pdf

United States Environmental Protection Agency (U.S. EPA), 2011. *Fact Sheet – Mandatory Reporting of Greenhouse Gases (40 CFR part 98)*. Available online at: http://www.epa.gov/ghgreporting/documents/pdf/2009/FactSheet.pdf.

3.8 Cultural Resources

Cultural resources include historic architectural resources, archaeological resources, and human remains. Paleontological resources include fossilized remains of vertebrate and invertebrate organisms, fossil tracks and trackways, and plant fossils. This section is based on the cultural resources analysis completed for the proposed project (Koenig, 2012) and provides an assessment of potential impacts on cultural resources that might be present in the vicinity of the proposed project. Mitigation measures to reduce impacts to a less-than-significant level are identified.

Setting

Definitions

Historical Resources and Historic Properties

Based on the CEQA Guidelines, Section 15064.5(a), historical resources include, but are not limited to, any object, building, structure, site, area, place, record, or manuscript that is historically or archaeologically significant or that is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Generally, a resource is considered by a lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (California Register).

Under federal regulations, historic properties are defined as any prehistoric or historic-period district, site, object, building, or structure included in or eligible for inclusion in the National Register of Historic Places (National Register). Historic properties that meet federal criteria are also considered historical resources under CEQA, as in accordance with Public Resources Code Section 5024.1(d)(1). Historical resources and historic properties refer to both significant architectural/structural resources and significant archaeological resources.

Area of Potential Effects

The Area of Potential Effects (APE) for the proposed project is "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" (36 CFR 800.16[b]).

The APE includes all areas of proposed ground-disturbing activity. This includes a horizontal APE of the entire 0.25-acre Gloria Way parcel and approximately 200 feet of pipeline alignment, 3-feet-wide, to connect to the pipelines on Bay Road and Gloria Way. Activities within the APE would include: retrofitting the existing Gloria Way Well with new casing and pumps; construction of an on-site treatment facility to remove elevated concentrations of manganese; and installation of a potable water pipeline between the well and the pipeline in Gloria Way. Construction equipment staging for these activities would be located on the well parcel or in paved areas of City property at the intersection of Gloria Way and Bay Road.

The maximum depth of new ground disturbance within the Gloria Way parcel would be approximately 3 feet below current ground surface except for the two pump stations at 5 feet below ground surface. The trench for the pipeline connection to Gloria Way would also be a maximum of 5 feet deep.

Paleontological Setting

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and marine coral), and fossils of microscopic plants and animals (microfossils). The age and abundance of fossils depend on the location, topographic setting, and particular geologic formation in which they are found. Fossil discoveries not only provide a historical record of past plant and animal life but can assist geologists in dating rock formations. In addition, fossil discoveries can expand our understanding of the time periods and the geographic range of existing and extinct flora or fauna.

Assessment Standards

The Society of Vertebrate Paleontology (SVP) has established guidelines for the identification, assessment, and mitigation of adverse impacts on nonrenewable paleontological resources (SVP, 1995). The SVP has helped define the value of paleontological resources and, in particular, states the following:

- Vertebrate fossils and fossiliferous (fossil-containing) deposits are considered significant nonrenewable paleontological resources, and are afforded protection by federal, state, and local environmental laws and guidelines.
- A paleontological resource is considered to be older than recorded history, or 5,000 years before present, and is not to be confused with archaeological resource sites.
- Invertebrate fossils are not significant paleontological resources, unless they are present with an assemblage of vertebrate fossils or they provide previously unknown information on the origin and character of the plant species, past climatic conditions, or the age of the rock unit itself.
- A project paleontologist, special interest group, lead agency, or local government can designate certain plant or invertebrate fossils as significant.

Based on these principles, the SVP has outlined criteria for screening the paleontological potential of rock units and has established assessment and mitigation procedures tailored to accommodating such potential. High and low potential rocks are determined by applying the following criteria (SVP, 1995):

- **High Potential.** Rock units (or formations) in which vertebrate or significant invertebrate fossils have been found. These rock units include sedimentary and some volcanic formations that contain significant fossil resources anywhere within their geographic extent and sedimentary deposits formed in a time period or composed of materials suitable for the preservation of fossils. Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant.

- **Low Potential.** Rock units that have few, if any, records of vertebrate fossils in institutional collections, or that have been shown in surveys or paleontological literature to be largely absent of fossil resources. Low potential rocks also include metamorphic and most volcanic rocks.

Although not discussed in SVP standards, artificial fills, slope deposits (such as colluvium,[1] landslides, and earth flows), and soils are materials with little or no potential to contain paleontological resources. While such materials were originally derived from rocks, they have been weathered or reworked such that fossils would not likely be preserved.

Paleontological Potential

The proposed project APE is underlain by Holocene alluvial deposits. These types of sediment have a low potential to yield significant paleontological remains because they are surface deposits and are not considered fossil-bearing rock units.

Geoarchaeological Context

East Palo Alto is on the southwestern shore of the southern extremity of San Francisco Bay, with salt ponds and tidal marshes marking the edge of the Bay less than one mile to the north and east of the project location. Until the twentieth century, these marshes were much more extensive, and would have provided prehistoric inhabitants with a variety of plant and animal resources for food, medicine, and building and craft materials. The current vegetation in the project vicinity is typical of an urban landscape, with lawns and ornamental flowers, shrubs, and trees.

Soils in the project area and surrounding vicinity are classified as Urban Land, including engineered and reworked native soils and imported fill (NRCS, 2012). Underlying formations are thick estuarine Bay Mud and Quaternary alluvial deposits (Witter et al, 2006). The Gloria Way well taps an aquifer in the San Francisquito Creek alluvial cone, composed of unconsolidated and semi-consolidated medium-grained alluvial sediments carried down from the Santa Cruz Mountains (Todd Engineers, 2012). The elevation is approximately 22 feet above mean sea level (amsl), with a gentle northeast slope toward the Bay.

The California coast has undergone dramatic landscape changes since humans began to inhabit the region more than 10,000 years ago. Rising sea levels and increased sedimentation into streams and rivers are among some of the changes (Helley and Graymer, 1979). In many places, the interface between older land surfaces and Holocene-age landforms are marked by a well-developed buried soil profile, or a paleosol. Paleosols preserve the composition and character of the earth's surface prior to subsequent sediment deposition; thus, paleosols have the potential to preserve archeological resources if the area was occupied or settled by humans (Meyer and Rosenthal, 2007). Because human populations have grown since the arrival of the area's first inhabitants, younger paleosols (late Holocene) are more likely to yield archeological resources than older paleosols (early Holocene or Pleistocene).

[1] A loose deposit of rock debris accumulated through the action of gravity at the base of a cliff or slope.

Geoarchaeological Potential

The proposed project APE is in an area mapped as Holocene alluvial deposits. As evidenced by other buried sites in the vicinity, this geologic formation has a very high potential to contain archaeological sites buried by natural alluvial processes (Meyer and Rosenthal, 2007).

Prehistory

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. Milliken et al. (2007) suggest a framework for the interpretation of the San Francisco Bay Area. That research divides human history in California into three broad periods: the Early Period, the Middle Period, and the Late Period. Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods.

The *Paleoindian Period* (13,500 to 10,000 before present [B.P.]) was characterized by big-game hunters occupying broad geographic areas. Evidence of human habitation during the *Paleoindian Period* has not yet been discovered in the San Francisco Bay Area. During the *Lower Archaic* of the *Early Period* (10,000 to 5500 B.P.), geographic mobility continued and is characterized by the millingslab and handstone as well as large wide-stemmed and leaf-shaped projectile points. The first cut shell beads and the mortar and pestle are documented in burials during the *Middle Archaic* of the *Early Period* (5500 to 2500 B.P.), indicating the beginning of a shift to sedentism. During the *Middle Period*, which includes the *Lower Middle Period* (*Initial Upper Archaic*; 2500 to 1570 B.P.), and *Upper Middle Period* (*Late Upper Archaic*; 1570 to 950 B.P.), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The first rich black middens are recorded from this period. The addition of milling tools, obsidian and chert concave-base projectile points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse. By the *Upper Middle Period*, mobility was being replaced by the development of numerous small villages. Around 1570 B.P. a "dramatic cultural disruption" occurred evidenced by the sudden collapse of the *Olivella* saucer bead trade network. During the *Initial Late Period* (*Lower Emergent*; 950 to 450 B.P.), social complexity developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments.

Ethnography

Based on a compilation of ethnographic, historic, and archaeological data, Milliken (1995) describes a group known as the Ohlone, who once occupied the general vicinity of the project area. While traditional anthropological literature portrayed the Ohlone peoples as having a static culture, today it is better understood that many variations of culture and ideology existed within and between villages. While these "static" descriptions of separations between native cultures of

California make it an easier task for ethnographers to describe past behaviors, this masks Native adaptability and self-identity. California's Native Americans never saw themselves as members of larger "cultural groups," as described by anthropologists. Instead, they saw themselves as members of specific villages, perhaps related to others by marriage or kinship ties, but viewing the village as the primary identifier of their origins.

Levy (1978) describes the language group spoken by the Ohlone, known as "Costanoan." This term is originally derived from a Spanish word designating the coastal peoples of Central California. Today Costanoan is used as a linguistic term that references to a larger language family spoken by distinct sociopolitical groups that spoke at least eight languages (as different as Spanish is from French) of the same Penutian language group. The Ohlone once occupied a large territory from San Francisco Bay in the north to the Big Sur and Salinas Rivers in the south. The project area is in the greater *Puichon* tribal area (Milliken, 1995). At least one *Puichon* village, *Ssipùtca*, was located along San Francisquito Creek.

Economically, Ohlone 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, and rabbit and other small mammals. The Ohlone 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, Ohlone society was severely disrupted by missionization, disease, and displacement. Today, the Ohlone still have a strong presence in the San Francisco Bay Area, and are highly interested in their historic and prehistoric past.

History

The Portola expedition made the initial historic contact with the native Ohlone Indians in the San Mateo County area while in search of Monterey Bay in 1769. Mission Santa Clara de Asís was established along Guadalupe Creek in 1777, and the Spanish ruled the area until 1821 when the Mexican Revolution ushered in the period of Mexican rule. The area of East Palo Alto was part of the Rancho de las Pulgas, a 35,000-acre ranch granted to José Darío Argüello in 1795. Following the end of the Mexican-American War in 1848, California was admitted to the Union in 1850. San Mateo County was formed from parts of San Francisco County and Santa Cruz County in 1856. During the latter half of the 19th century, the County was focused on ranching, transportation and shipping, brick manufacturing, and farming. Flower and greenhouses became a major industry and remained so into the 1940s and 1950s (East Palo Alto, 2012). Influxes of settlers, from the Dust Bowl migrants of the 1930s to post-World War II military veterans and more recently entrepreneurs and technical companies, have gradually urbanized the area.

Research Methods and Results

Records Search and Literature Review

ESA conducted a records search for the proposed project at the Northwest Information Center (NWIC) of the California Historical Resources Information System on September 6, 2012 (File No. 12-0243). The purpose of the records search was to (1) determine whether known cultural resources have been recorded within or adjacent to the APE; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and evaluation of cultural resources. The records search included an examination of the following documents:

- **NWIC digitized base maps** (USGS Palo Alto 7.5-minute topographic maps), to identify recorded archaeological sites and studies within a ½-mile radius of the APE.

- **NWIC digitized base maps** (USGS Palo Alto 7.5-minute topographic maps), to identify recorded historic-period resources of the built environment (building, structures, and objects) within a ½-mile radius of the APE.

- **Resource Inventories**: *California Inventory of Historical Resources*, *California Historical Landmarks*, *Historic Properties Directory Listing by City* (through July 5, 2012)

- **Prehistoric Archaeology:** T.L. Jones and K.A. Klar (2007) *Prehistoric California: Colonization, Culture, and Complexity.* AltaMira Press; N. C. Nelson (1909) *Shellmounds of the San Francisco Bay Region*. University of California Publications in American Archaeology and Ethnology Volume 7, No. 4.

- **Ethnographic Sources:** R. Levy (1978) Costanoan. In *Handbook of North American Indians*, Volume 8, California. Robert F. Heizer, editor. Smithsonian Institution, Washington, D.C.; R. Milliken (1995) *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769-1810*. Ballena Press Anthropological Papers No. 43, Menlo Park.

- **Historic Maps:** An extensive on-line historic map collection with over 300 maps and views of California and the San Francisco Bay Area is available online at http://davidrumsey.com; historic USGS topographic quadrangles were downloaded from the USGS website at http://store.usgs.gov/.

Records Search Results

The records search indicated that 19 cultural resources studies have been completed within a ½-mile radius of the APE (**Table 3.8-1**); 12 of these reports do not document specific locales within the APE. These 12 reports are either regional overviews, literature searches that resulted in no fieldwork, or Master's theses or other projects that may or may not have included pedestrian field survey within the project vicinity. Reports marked with an asterisk (*) in Table 3.8-1 indicate specific areas for field survey within the records search radius, and only report S-015940 included survey within the portion of the project APE along the Bay Road right of way.

TABLE 3.8-1
CULTURAL RESOURCES STUDIES WITHIN ½-MILE OF THE PROJECT APE

Study No.	Title	Author	Year
S-000848	A Summary of the Knowledge of the Central and Northern California Coastal Zone and Offshore Areas, Vol. III, Socioeconomic Conditions, Chapter 7: Historical and Archaeological Resources	Fredrickson, David A.	1977
S-003023*	A Preliminary Reconnaissance of the Archaeological Resources of the East Palo Alto Redevelopment Project Area	Dotta, James	1974
S-003094*	An Archaeological Reconnaissance of the Park Plaza Lot at the Southeast Corner of Bay and University in East Palo Alto, California (letter report)	Dietz, Stephen A.	1978
S-003146	A Preliminary Inventory of Recorded Archaeological Resources in Pacific Gas & Electric Company's South Bay Study Area, San Francisco Bay, California	King, Thomas F. and Roland Melander	1973
S-003163*	An Archaeological Reconnaissance of the Proposed Dumbarton Bridge Replacement Project (letter report)	Dietz, Stephen A.	1973
S-007483	Revised Data Recovery Plan, Part 1: Review of the Prehistory of the Santa Clara Valley Region as Part of the Guadalupe Corridor Compliance with 36 CFR Part 800	Elsasser, Albert B., R.L. Anastasio, J.C. Bard, C.I. Busby, D. M. Garaventa, S.A. Guedon, E.L. Moore, K.M. Nissen, and M.E. Tannam	1985
S-009462	Identification and Recording of Prehistoric Petroglyphs in Marin and Related Bay Area Counties	Miller, Teresa Ann	1977
S-009580	The Spatial Organization of Human Population on Central California's San Francisco Peninsula at the Spanish Arrival	Milliken, Randall T.	1983
S-009583	Ecology of the Pre-Spanish San Francisco Bay Area	Mayfield, David W.	1978
S-015529	California, Oregon, and Washington: Archaeological Resource Study	Gearhart, Robert L., C.L. Bond, S.D. Hoyt, J.H. Cleland, J. Anderson, P. Snethcamp, G. Wesson, J. Neville, K. Marcus, A. York, and J. Wilson	1993
S-015940*	Cultural Resource Evaluation, Bay Road and Gloria Way Residential Development Project, County of San Mateo	Archaeological Resource Management	1993
S-016713*	Cultural Resource Evaluation, Nugent Square Project in East Palo Alto, County of San Mateo	Archaeological Resource Management	1994
S-018217	Cultural Resource Evaluations for the Caltrans District 04 Phase 2 Seismic Retrofit Program, Status Report: April 1996	Gmoser, Glenn	1996
S-026045*	Cultural Resources Reconnaissance Survey and Inventory Report for the Metromedia Fiberoptic Cable Project, San Francisco Bay Area and Los Angeles Basin Networks	Carrico, Richard, Theodore Cooley, and William Eckhardt	2000
S-031461*	Cultural Resource Evaluation of the Bay Road Housing Project in East Palo Alto	Archaeological Resource Management	2004
S-032596	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	Milliken, Randall, Jerome King, and Patricia Mikkelsen	2005
S-033600	Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4	Meyer, Jack and Jeff Rosenthal	2007
S-038063	Smart Corridors Geoarchaeological Sensitivity Research (letter report)	Kaptain, Neal	2009
S-038684	A Cultural Resources Study for the San Mateo County SMART Corridors Project, San Mateo County, California	Kozakavich, Stacy, and Alexandra Merritt-Smith	2008

SOURCE: NWIC, 2012

Two cultural resources (CA-SMA-262 and CA-SMA-267) have been previously recorded within the ½-mile records search radius. Both of these are prehistoric archaeological sites that include human burials, midden deposits, and artifact concentrations (**Table 3.8-2**). Both sites were identified at depths below the ground surface (CA-SMA-262 at 40-45 cm and CA-SMA-267 at 120 cm).

TABLE 3.8-2
DOCUMENTED CULTURAL RESOURCES WITHIN ½-MILE OF THE PROJECT APE

Primary	Trinomial	Description	National Register Status	Distance from APE
P-41-000258	CA-SMA-262	Single burial found in ashy gray midden matrix at depth of 40-45cm below surface; shell pendants and a bead, baked clay object and ground stone fragment in association	Not Determined; likely eligible	1,500 feet (450 m)
P-41-000263	CA-SMA-267	Single burial found in dark brown shell midden matrix at depth of 120 cm below surface; few red chert/jasper flakes and unworked shell found in association	Not Determined; likely eligible	500 feet (150 m)

SOURCE: NWIC, 2012

Neither of the two sites was subjected to a complete scientific excavation. Although the burial associated with CA-SMA-262 was encountered in 1959 during an excavation in the front yard of a house, a site record form was not completed until 1985. At that time, pockets of dark, friable midden soil were visible along a road cut and a former channel of San Francisquito Creek. The human remains collected in 1959 were curated at Stanford University.

CA-SMA-267 was encountered in 1986 during trenching for placement of a sewer line. The burial, although badly disturbed by the backhoe, was excavated by researchers from San Jose State University, and the collected remains were transferred to a local Ohlone group for reburial. Because both sites were found in buried contexts in an already-developed area, no attempt has been made to determine the horizontal or vertical extent of either site, although based on typical midden sites in the vicinity, it is estimated that cultural materials likely extend under several adjacent houses in both locations.

Organizational Contacts

ESA submitted a sacred lands search request to the Native American Heritage Commission (NAHC) on September 18, 2012. A response from the NAHC was received via letter dated September 25, 2012. A records search of their sacred land file failed to indicate the presence of Native American cultural resources in the immediate vicinity of the APE. The NAHC also provided a list of Native American individuals and organizations who might have additional information or concerns. As part of the Section 106 process, letters to these individuals were sent directly from the federal lead agency (U.S. EPA) to initiate government-to-government consultation.

Field Methods and Summary

ESA surveyed the proposed project APE on September 20, 2012, examining all areas of open ground surface. Existing buildings and structures within the APE and surrounding parcels were also examined to determine if any of these resources meet the minimum age threshold (50 years) for listing in the National Register. Because of the small area of the APE, formal survey transects were not used. All areas of exposed ground surface within the boundaries of the Gloria Way Well parcel were examined. Surface visibility within the Gloria Way parcel was approximately 75 percent.

No cultural resources or other evidence of past human use and occupation was identified within the proposed project APE. None of the adjacent buildings appear to meet the minimum age threshold for listing in the National Register. No potential historic properties were identified as a result of the survey effort.

Regulatory Framework

National Historic Preservation Act, as amended (1966)

Cultural resources are protected through the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. 470 et seq.), and it's implementing regulation, Protection of Historic Properties (36 CFR Part 800). Under the NHPA, a cultural resource is considered significant if it meets the Criteria for Evaluation (36 CFR 60) for the National Register.

Prior to implementing an "undertaking" (i.e., "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval"), 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 (ACHP) and the State Historic Preservation Officer (SHPO) a reasonable opportunity to comment on any undertaking that would potentially affect properties listed or eligible for listing in the National Register. The lead federal agency is responsible for project compliance with Section 106 of the NHPA. The U.S. Environmental Protection Agency has consulted with SHPO to fulfill the Section 106 consultation requirements for the proposed project.

National Register of Historic Places

The National Register was established by the NHPA of 1966, as "an authoritative guide to be used by federal, state, and local governments, private groups and citizens to identify the Nation's historic resources and to indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). The National Register recognizes both historic and prehistoric properties that are significant at the national, state, and local levels.

To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archaeology, engineering, or culture. As indicated in Section 101(d)(6)(A) of the NHPA, properties of traditional religious and cultural importance to an Indian tribe are eligible

for inclusion in the National Register. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (36 CFR 60.4):

A) Are associated with events that have made a significant contribution to the broad patterns of our history;

B) Are associated with the lives of persons significant in our past;

C) 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) Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for National Register listing (36 CFR 60.4).

In addition to meeting the criteria of significance, a property must have integrity, meaning the ability of a property to convey its significance. The National Register recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association (36 CFR 60.4).

State Regulations

The State of California implements the NHPA of 1966, as amended (16 United States Code 470f), through its statewide comprehensive cultural resource surveys and preservation programs. The California Office of Historic Preservation, as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The Office of Historic Preservation also maintains the California Historic Resources Inventory. The SHPO is an appointed official who implements historic preservation programs within the state's jurisdictions.

California Public Resources Code and Health and Safety Code

Several sections of the California PRC protect cultural resources. Under Section 5097.5, no person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site (including fossilized footprints), inscriptions made by human agency, rock art, or any other archaeological, paleontological, or historical feature situated on public lands, except with the express permission of the public agency that has jurisdiction over the lands. Violation of this section is a misdemeanor. Section 5097.98 states that if Native American remains are identified within a project area, the lead agency must work with the appropriate Native Americans as identified by the Native American Heritage Commission and develop a plan for the treatment or disposition of, with appropriate dignity, the human remains and any items associated with Native American burials. These procedures are also addressed in Section 15046.5 of the CEQA Guidelines. California Health and Safety Code Section 7050.5 prohibits disinterring, disturbing, or removing human remains from a

location other than a dedicated cemetery. Section 30244 of the PRC requires reasonable mitigation for impacts on paleontological and archaeological resources that occur as a result of development on public lands.

PRC Section 5024.1[a] states that the California Register is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change." PRC Section 5024.1[b]) states that the criteria for eligibility to the California Register are based on National Register criteria, and that certain resources are determined by the statute to be automatically included in the California Register, including California properties formally eligible for or listed in the National Register.

Title 14, Section 4307 of the California Code of Regulations also prohibits any person from removing, inuring, defacing, or destroying any object of paleontological, archaeological, or historical interest or value.

California Environmental Quality Act

CEQA, as codified in PRC Section 21000, et seq., is the principal statute governing the environmental review of projects in the state. The CEQA Guidelines define a historical resource as: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission for listing 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.

CEQA Section 15064.5(3) states that 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 lead agency considers a resource to be "historically significant" if the resource meets the criteria for listing in the California Register (PRC Section 5024.1, Title 14 of the California Code of Regulations, Section 4852[b]), including the following:

1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2) Is associated with the lives of persons important in our past;

3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4) Has yielded, or may be likely to yield, information important in prehistory or history.

For a resource to be eligible for the California Register, it must also retain enough integrity to be recognizable as a historical resource and to convey its significance. A resource that does not retain sufficient integrity to meet the National Register criteria may still be eligible for listing in the California Register.

CEQA requires lead agencies to determine if a proposed project would have a significant effect on important archaeological resources, either historical resources or unique archaeological resources. 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 21083.2 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 15064.5[c][4]).

Significance Criteria under NHPA

Section 106 of the NHPA requires that a federal agency with direct or indirect jurisdiction over a proposed federal or federally-assisted undertaking, or issuing licenses or permits, must consider the effect of the proposed undertaking on historic properties. An historic property may include a prehistoric or historic-period district, site, building, structure, or object included in, or eligible for inclusion in the National Register maintained by the U.S. Secretary of the Interior.

A significant impact would occur if a proposed action results in an adverse effect to a property that is listed in or eligible for inclusion in the National Register. The specific Criteria of Effect and Adverse Effect, as defined in 36 CFR 800.9, used to evaluate an undertaking's effect on a historic property, are as follows:

- An undertaking has an effect on a historic property when it may alter the characteristics of the property that qualify the property for inclusion in the National Register. For the purpose of determining effect, alteration to features of the property's location, setting, or use may be relevant depending on a property's significant characteristics and should be considered.

- An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:

  (1) Physical destruction, damage, or alteration of all or part of the property;

  (2) Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;

  (3) Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;

  (4) Neglect of a property resulting in its deterioration or destruction; and

  (5) Transfer, lease, or sale of the property.

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
CULTURAL RESOURCES — Would the project:					
CR-1	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
CR-2	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
CR-3	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
CR-4	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Impact Discussion for CR-1

No architectural or structural resources potentially eligible for listing in the California or National Register, including buildings, structures, objects, or districts, were identified in or immediately adjacent to the Gloria Way Well APE. Thus, the proposed project would not cause a substantial adverse change in the significance of a known historic property or historical resource. This criterion does not apply to the proposed project.

Mitigation: None required.

Impact Discussion for CR-2

While the surface survey did not identify potential archaeological resources in the APE, the proposed project is located in Holocene alluvial deposits. This geologic formation has a very high potential to contain prehistoric archaeological sites buried by natural alluvial processes. Two buried sites with human remains have been previously identified within a ½-mile radius of the project APE. Based on the geoarchaeological assessment there is potential for deeply-buried, well-developed soil horizons to be in the APE, and therefore potential for archaeological resources associated with those buried soils.

Excavation, grading, and the movement of heavy construction vehicles and equipment could expose and cause impacts on unknown buried archaeological resources, a potentially significant impact. However, this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure CR-1 (Cultural Resources Monitoring)**, which requires archaeological and Native American monitoring during ground-disturbing activities, and **Measure CR-2 (Unanticipated Discovery of Archaeological Resources)**, which requires avoidance measures or the appropriate treatment of archaeological resources if accidentally discovered during project construction. Implementation of these mitigation measures would reduce potential impacts to archaeological resources to a less-than-significant level.

Mitigation:

Mitigation Measure CR-1: Cultural Resources Monitoring.

Retention of a Qualified Archaeologist. Prior to the start of any ground-disturbing activity, the City shall retain a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for archaeology (Department of the Interior, 2012), to carry out all mitigation measures related to archaeological resources.

Cultural Resources Training. The qualified archeologist, or an archaeologist working under the direction of the qualified archaeologist, shall conduct pre-construction cultural resources worker sensitivity training to inform construction personnel of the types of cultural resources that may be encountered, and to bring awareness to personnel of actions to be taken in the event of a cultural resources discovery. The City shall complete training for all construction personnel and retain documentation showing when training of personnel was completed.

Development of a Cultural Resources Monitoring and Mitigation Plan. The qualified archaeologist shall develop a Cultural Resources Monitoring and Mitigation Plan (Plan) based on project plans and any other relevant information. The Plan shall specify the location, duration and timing of monitoring, which shall occur from the time of initial ground disturbance until a depth at which the potential to encounter buried archaeological deposits is greatly reduced. The Plan shall also establish emergency procedures applicable to the discovery of unanticipated significant archaeological resources. The Plan shall state that avoidance or preservation in place shall be the preferred means of mitigating impacts to archaeological resources. The Plan shall include, at a minimum, procedures for: the re-direction of ground disturbing activities in the event of a discovery; the evaluation and protection of resources encountered; notification protocols; and treatment options in the

event avoidance is determined to be infeasible. The Plan shall be developed in coordination with the City and the appropriate Native American tribe and shall also include provisions for permanent curation. A curation agreement shall be executed prior to the issuance of a grading permit.

Archaeological and Native American Monitoring. Prior to the start of any ground-disturbing activity, a qualified archaeological monitor and Native American monitor shall be retained by the City to monitor ground-disturbing activities including, but not limited to, brush clearance and grubbing, grading, trenching, excavation, and the construction of fencing, as specified in the Cultural Resources Monitoring and Mitigation Plan. Archaeological monitoring shall be conducted by a qualified archaeologist familiar with the types of prehistoric resources that could be encountered within the project, and under direct supervision of the qualified archaeologist.

The archaeological and Native American monitors shall keep daily logs. After monitoring has been completed, the qualified archaeologist shall prepare a monitoring report that details the results of monitoring, which shall be submitted to the City and to the Northwest Information Center at Sonoma State University.

Mitigation Measure CR-2: Unanticipated Discovery of Archaeological Resources.

If cultural resources are encountered during the course of ground disturbing activities, the City shall cease any ground disturbing activities within 100 feet of the find until it can be evaluated by the qualified archaeologist. The qualified archaeologist, the archaeological monitor and/or Native American monitor shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of the find until the qualified archaeologist and Native American monitor have evaluated the find, determined whether the find is culturally sensitive, and designed an appropriate short-term and long term treatment plan, following the procedures outlined in the Cultural Resources Mitigation and Monitoring Plan. If the find is determined to be culturally significant, the City shall also contact the U.S. EPA who in turn will contact the Secretary of the Interior who may undertake additional actions to mitigate potential losses.

Impact Discussion for CR-3

Based on the information presented above in the paleontological setting, there is a low potential for project construction to uncover unique or significant fossils within the APE. Construction excavations would encounter Holocene alluvium or artificial fills associated with previous development (e.g., road bases, foundations, and previous backfills for underground utilities). Due to their age and origin, these geological materials have little to no likelihood of containing unique or significant fossils. Therefore, the impact related to direct or indirect effects on paleontological resources would be less than significant, and no mitigation would be required.

Mitigation: None required.

Impact Discussion for CR-4

Although no known human burials have been identified within the project APE, the possibility of encountering human remains cannot be entirely discounted. Earthmoving activities associated with project construction could result in direct impacts on previously undiscovered human remains. Therefore, impacts regarding disturbance to human remains are considered potentially significant. However, this impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure CR-3 (Accidental Discovery of Human Remains)**, which requires avoidance measures or the appropriate treatment of human remains if accidentally discovered during project construction.

Mitigation:

Mitigation Measure CR-3: Accidental Discovery of Human Remains.

In the event of discovery or recognition of any human remains during construction activities, such activities within 100 feet of the find shall cease until the Santa Clara County Coroner has been contacted to determine that no investigation of the cause of death is required. The Native American Heritage Commission (NAHC) will be contacted within 24 hours if it is determined that the remains are Native American. The NAHC will then identify the person or persons it believes to be the most likely descendant from the deceased Native American, who in turn would make recommendations to the City for the appropriate means of treating the human remains and any grave goods.

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3.9 Biological Resources

Setting

The proposed project is located in the San Francisco Bay Area, in a densely urbanized area of the City of East Palo Alto, San Mateo County. The San Francisco Bay, where coastal salt marshes form the interface between land and water, is located approximately 1 mile east of the project site. San Francisquito Creek, the closest creek to the project site, flows west-to-east approximately 1 mile to the south.

The 0.12-acre Gloria Way Well site (project site) is bordered by Gloria Way to the east and Bay Road to the south. Existing facilities and improvements on the project site include the Gloria Way Well, a well pump, a pressure tank, an electrical transformer, various pipes and valves. A chain link fence encloses the existing waters supply facilities. The site is relatively level, sloping very gently (less than one percent) to the northeast. There are no wetlands or other sensitive biological resources on or near the project site.

Surrounding land uses include single-family residential on adjacent parcels to the north and west; multi-family residential, and civic land uses to the east; and multi-family residential and neighborhood commercial land uses along Bay Road to the south.

Plant Communities

Ornamental Landscaping

The project site is minimally landscaped with two mature privet trees *(Ligustrum* sp.) and three mature oleander bushes (*Nerium oleander*). The privet trees have two and three trunks, respectively, with each trunk measuring between 10.5 and 15.5 inches diameter at breast height (dbh). Vegetative ground cover includes petty spurge (*Euphorbia peplus*), filaree (*Erodium cicutarium*), storksbill (*Geranium molle*), cheeses (*Malva parviflora*), and non-native grasses.

Adjacent parcels also have ornamental landscaping comprised of native and nonnative species.

Wildlife Habitats

Ornamental landscaping in densely urbanized areas like the project site typically provides limited habitat value to wildlife, and does not support threatened or endangered species. However, large mature trees like the two existing privet trees on the project site that are large and healthy with complex canopies and a mix of species, provide more than expected nesting and foraging habitat to birds and arboreal squirrels. The following common avian species were observed at or in the vicinity of the Gloria Way Well site during a biological site reconnaissance survey conducted by ESA on December 7, 2012: western scrub jay (*Aphelocoma californica*), Anna's hummingbird (*Calypte anna*), house finch (*Carpodacus mexicanus*), rock pigeon (*Columba livia*), European starling (*Sturnus vulgaris*), American crow (*Corvus brachyrhynchos*), chestnut backed chickadee (*Poecile rufescens*), and various gull species (ESA, 2012). All bird nesting activity is protected

under California Fish and Game Code Section 3503, as well as Section 3513 of the Code and the Federal Migratory Bird Treaty Act (16 USC, Sec. 703, Supp. I, 1989) (see the discussion under the heading, Regulatory Framework, below, for additional information regarding the Federal Migratory Bird Treaty Act).

The closest riparian habitat is the San Francisquito Creek corridor located 0.8 mile south of the project site. The other closest natural habitats to the project site are coastal salt marsh and open water/tidal slough that occur along the eastern margin of the City adjacent to the San Francisco Bay, approximately 1 mile east of the project site.

Wildlife Movement Corridors, Sensitive Plants, and Wetlands

Wildlife movement corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or by areas of human disturbance or urban development. Since the project site is located 1 mile from the closest extensive area of natural habitat, and because the land uses surrounding the project site act as a barrier between the natural habitats and the project site, the project site is not part of an established native resident or migratory wildlife corridor.

Since no natural habitats or vegetation communities currently exist on the site, the proposed project would have no direct or indirect adverse effects on any special status plant species.

No wetlands were observed within or in the immediate vicinity of the Gloria Way Well site during a biological reconnaissance survey conducted by ESA staff on December 7, 2012 (ESA, 2012). ESA also accessed the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory database on December 14, 2012 to determine if any wetland or riparian habitats have been documented in the project vicinity. The results of the database search revealed that neither of these habitats has been documented within 0.5 mile of the project site (USFWS, 2012b).

Special-Status Wildlife Species

Several species known to occur in the project vicinity are protected pursuant to federal and/or state endangered species laws, or have been designated as species of concern by the U. S. Fish and Wildlife Service (USFWS) or species of special concern by the California Department of Fish and Game (CDFG). In addition, Section 15380(b) of the California Environmental Quality Act (CEQA) Guidelines provides a definition of rare, endangered, or threatened species that are not included in any formal listing process. Species recognized under these terms are collectively referred to as “special-status species.”

Special-Status Species in the Project Area

A list of special-status plant and wildlife species with the potential to occur in the project area was compiled based on the California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDB) (CDFG, 2012) and the USFWS Sacramento District online database (USFWS, 2012a) results for the USGS 7.5-Minute Topographic Quadrangles closest to

the Gloria Way Well site (Palo Alto – 428A, Mountain View – 428B, Redwood Point – 447C, Newark – 447D). ESA conducted a biological reconnaissance survey of the project site and immediately adjacent properties on December 7, 2012 and did not observe any special-status wildlife or plant species nor associated habitat (ESA, 2012).

Of the 27 threatened and endangered wildlife and plant species listed in the project vicinity, none are expected to occur on the project site. Three species (salt marsh harvest mouse [*Reithrodontomys raviventris*], California clapper rail [*Rallus longirostris obsoletus*], and California sea blite [*Suaeda californica*]) are associated with salt marsh habitat found at the margin of the San Francisco Bay and ten species (western snowy plover [*Charadrius alexandrines nivosus*], California brown pelican [*Pelecanus occidentalis californicus*], California least tern [*Sternula antillarum browni*], green sturgeon [*Acipenser medirostris*], delta smelt [*Hypomesus transpacificus*], coho salmon [*Oncorhynchus kisutch*], Central California Coastal steelhead and Central Valley steelhead [*Oncorhynchus mykiss*], and Central Valley spring-run and winter-run Chinook salmon [*Oncorhynchus tshawytscha*]) are associated with the Bay shoreline and adjoining aquatic habitat which is over one mile away through urban streetscape. Neither of these habitats have any connectivity to the project site.

The remaining 14 listed wildlife and plant species in the project vicinity (Alameda whipsnake [*Masticophis lateralis euryxanthus*], San Francisco garter snake [*Thamnpphis sirtalis tetrataenia*], bay checkerspot butterfly [*Euphydryas editha bayensis*], California tiger salamander [*Ambystoma californiense*], California red-legged frog [*Rana draytonii*], vernal pool fairy shrimp [*Branchinects lynchi*], vernal pool tadpole shrimp [*Lepidurus packardi*], marbled murrelet [*Brachyramphus*], San Mateo thorn mint [*Acanthomintha duttonii*], fountain thistle [*Cirsium fontinale var. fontinale*], Marin dwarf-flax [*Hesperolinon congestum*]), Contra Costa goldfields [*Lasthenia conjugens*], California sea blite [*Suaeda californica*], and showy Indian clover [*Trifolium amoenum*]) are associated with annual grasslands, valley oak woodlands, vernal pools, freshwater aquatic and wetlands, and mature old growth forests, none of which exist onsite or are located within 0.5 miles of the project site. Four species with designated critical habitats documented in the project vicinity include the bay checkerspot butterfly, Central California coastal steelhead, California red-legged frog, and Alameda whipsnake, however this habitat is not documented within five miles of the project site.

Regulatory Framework

Federal Endangered Species Act

According to FESA, the United States Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) have regulatory authority over federally listed species. Under FESA, a permit is required to "take" a listed species for any action that may harm a member of that species. The term "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" under Section 9 of FESA.

Under federal regulation, "take" further encompasses habitat modification or deprivation where it would be anticipated to result in death or injury to listed wildlife by significantly inhibiting critical behavioral patterns, including breeding, feeding, or sheltering. If a project would result in the take of a federally listed species, the project proponent must obtain either an incidental-take permit, under Section 10(a) of FESA, or a federal interagency consultation, under Section 7 of FESA prior to the take. No federally listed species are expected to occur in the project vicinity.

Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 U.S.C., Sec. 703, Supp. I 1989), prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Nesting birds may occupy the two existing mature privet trees on the project site, as well as ornamental trees on adjacent properties.

California Endangered Species Act

The California Endangered Species Act (CESA) establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. Pursuant to the requirements of CESA, a state or local public agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project area and determine whether the project will have a potentially significant impact on such species.

California Native Plant Protection Act

The California Native Plant Protection Act (Fish and Game Code Sections 1900–1913) and the Natural Communities Conservation Planning Act provide guidance on the preservation of plant resources; these two acts underlie the language and intent of Section 15380(d) of the CEQA Guidelines. Vascular plants listed as rare or endangered by the CNPS (2001), but which have no designated status or protection under federal or state endangered species legislation, are defined as follows:

- List 1A: Plants presumed extinct
- List 1B: Plants rare, threatened, or endangered in California and elsewhere
- List 2: Plants rare, threatened, or endangered in California, but more numerous elsewhere
- List 3: Plants about which more information is needed – a review list
- List 4: Plants of limited distribution – a watch list

In general, plants appearing on CNPS List 1A, 1B, or 2 are considered to meet the criteria for endangered, threatened, or rare as laid out in Section 15380 of the CEQA Guidelines. Additionally, plants listed on CNPS List 1A, 1B, or 2 also meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (CESA) of the California Fish and Game Code. The CNDDB includes plants appearing on CNPS Lists 1A, 1B, and 2.

Plants appearing on CNPS Lists 3 and 4 are not protected under federal or state legislation and are not considered in the evaluation of impacts below. Based on the CNDDB results and the biological reconnaissance survey conducted by ESA on December 7, 2012, no plants appearing on the CNPS Lists 1A, 1B, and 2 are expected to occur at the project site.

Clean Water Act

Wetlands and other waters (e.g., rivers, streams, and natural ponds) are a subset of "waters of the U.S." and receive protection under Section 404 of the Clean Water Act. The U.S. Army Corps of Engineers (Corps) has primary federal responsibility for administering Clean Water Act regulations and requires a permit if a project discharges dredged, excavated, or fill material in wetlands, streams, rivers, and other U.S. waters (ESA, 2012). No waters of the U.S. have been documented within 0.5 mile of the Gloria Way Well site (USFWS, 2012b; City of East Palo Alto, 1999).

Porter-Cologne Water Quality Protection Act

Under Section 401 of the federal Clean Water Act, states must certify that any activity subject to a permit issued by a federal agency (such as the Corps; see above) meets all state water quality standards. In California, pursuant to Section 401 of the Clean Water Act, the State Water Resources Control Board (SWRCB) considers that "waters of the state" include, but are not limited to, rivers, streams, lakes, bays, marshes, mudflats, unvegetated seasonally ponded areas, drainage swales, sloughs, wet meadows, natural ponds, vernal pools, diked bay lands, seasonal wetlands, and riparian woodlands. Under the Porter-Cologne Water Quality Control Act (Porter-Cologne), all waters of the United States that are within the borders of California are also waters of the state. There are no waters of the state within or immediately adjacent to the project site (ESA, 2012). Further, no waters of the state have been documented within 0.5 mile of the Gloria Way Well site (USFWS, 2012b; City of East Palo Alto, 1999).

East Palo Alto Tree Ordinance

The City's Tree Ordinance, encoded in Article 4 of the City's Zoning Regulations, seeks to preserve native and ornamental trees for the health, safety, and welfare of the City's residents. The ordinance defines a "tree" as a woody perennial that is over 10 feet in height at maturity, and that has a main stem or trunk, or a multi-stemmed trunk system with a formed crown. The following trees are protected by the ordinance:

(a) Any tree having a main stem or trunk which measures 40 inches or greater in circumference at a height of 24 inches above natural grade;

(b) Any tree within a public street or public right of way, regardless of size;

(c) Any tree that existed at the time of an approval granted under the City's Subdivision or Zoning Ordinance and required to be preserved as part of such approval;

(d) Any tree required to be planted as a condition of any development approval granted by the City; and

(e) Any tree required to be planted as a replacement for an unlawfully removed tree as provided in Subsection 6420.10(a) of the Zoning Regulations.

Persons seeking to remove trees are required to apply for a tree removal permit from the City of East Palo Alto Director of Planning. The application must contain the number and location of each tree to be removed, the type and approximate size of the tree, and the reason for removal. Depending on criteria such as the erosion potential of the site; the condition of the tree removed; the number of healthy trees the site is able to support; and other criteria, the Director of Planning may require replacement plantings as a condition of the tree removal permit.

The ordinance applies to every owner of real property within the City, and every person responsible for removing or damaging a protected tree.

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
BIOLOGICAL RESOURCES — Would the project:					
BIO-1	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
BIO-2	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
BIO-3	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
BIO-4	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
BIO-5	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
BIO-6	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Impact Discussion for BIO-1

The Gloria Way Well site is currently developed with water supply facilities and associated infrastructure. The site is minimally landscaped and includes two mature privet trees, three large oleander shrubs, and vegetative ground cover. Ornamental landscaping in densely urbanized areas like the project site typically provides limited habitat value to wildlife, and is not expected to support threatened or endangered species. No special status species or their designated habitat was observed within or near the project site during the biological reconnaissance survey conducted by ESA on December 7, 2012. Therefore, implementation of the proposed project is not anticipated to have any effect, either directly or indirectly, on any plant or wildlife species identified as a candidate, sensitive, or special-status by the CDFG or USFWS because no such species or their designated habitat are expected to occur within or adjacent to the Gloria Way Well site.

It is assumed that all existing vegetation, including the tree and bushes, could require removal during project construction. The existing privet trees are protected under the City's Tree Ordinance. In addition, the existing ornamental trees and shrubs on the project site may provide potential habitat for common nesting birds, including western scrub jay, Anna's hummingbird, house finch, rock pigeon, European starling, American crow, chestnut backed chickadee, and various gull species. All bird nesting activity is protected under California Fish and Game Code and the Migratory Bird Treaty Act. Removal of ornamental trees and shrubs could result in direct mortality of common nesting birds. Further, construction noise and human disturbance could cause nest abandonment, death of the young, or loss of reproductive potential at active nests within or adjacent to the project site, a potentially significant impact. However, with implementation of **Mitigation Measure BIO-1 (Measures to Minimize Disturbance to Nesting Birds)**, the impact would be reduced to a less-than-significant level. Because ornamental landscaping is readily available on adjacent and nearby parcels, the removal of the two existing mature trees would not be considered a substantial reduction in nesting bird habitat.

Mitigation:

Mitigation Measure BIO-1: Measures to Minimize Disturbance to Nesting Birds.

As part of construction contractor specifications, the City of East Palo Alto shall require the contractor(s) to avoid disturbing bird nests during construction. If site clearing and preparation, including removal of trees or shrubs, is scheduled to occur during the nonbreeding season (September 1 through January 31), no mitigation is required.

If site clearing and preparation, including vegetation removal, is scheduled to occur during the breeding season (February 1 through August 31), the following measures shall be implemented to avoid potential adverse effects to nesting birds:

- A qualified wildlife biologist shall conduct preconstruction surveys of all potential nesting habitat within 250 of the construction disturbance area. If no active nests are found during the preconstruction surveys, no further mitigation is required. Trees and shrubs within the construction footprint that have been determined to be unoccupied by special-status birds or that are located outside the no-disturbance buffer for active nests may be removed.

- If active nests are found during preconstruction surveys, the qualified biologist shall coordinate with the California Department of Fish and Game (CDFG) and establish a no-disturbance buffer around the nesting location(s) to avoid disturbance or destruction of the nest site to avoid disturbance or destruction of the nest until after the breeding season or until after the qualified wildlife biologist determines the young have fledged (usually late June through mid-July). The extent of the buffer shall be determined by the wildlife biologist based on the species' sensitivity to disturbance (which can vary among species); the level of noise or construction disturbance; light of sight between the nest and disturbance; ambient noise levels; and consideration of other topographical or artificial barriers. Any nests initiated during construction are presumed to be unaffected and no buffer is necessary.

Impact Discussion for BIO-2

No riparian habitat or other sensitive natural community occurs within or adjacent to the Gloria Way Well site. The closest riparian habitat is the San Francisquito Creek corridor approximately 0.8 mile south of the project site. The other closest natural habitats to the project site are coastal salt marsh and open water/tidal slough that occur along the eastern margin of the City adjacent to the San Francisco Bay, approximately 1 mile east of the project site. Implementation of the proposed project would have no effect on the San Francisquito Creek corridor, coastal salt marshes, or open water/tidal sloughs. No impact would result.

Mitigation: None required.

Impact Discussion for BIO-3

No wetlands, or other waters of the U.S. or waters of the state, exist within 0.5 mile of the Gloria Way Well site. Project implementation would not directly affect any wetlands, and would not be expected to indirectly effect wetlands located over 0.5 mile from the site. Thus, no impact would result.

Mitigation: None required.

Impact Discussion for BIO-4

Since the project site is located 1 mile from the closest extensive area of natural habitat, and because the land uses surrounding the project site act as a barrier between the natural habitats and the project site, the project site is not part of an established native resident or migratory wildlife corridor. No impact would result.

Mitigation: None required.

Impact Discussion for BIO-5

Two mature privet trees that currently exist on the site would be removed during project construction to accommodate the proposed facility improvements. These trees meet the criteria for protection under the City's tree ordinance. As a result, consistent with the ordinance, the City would submit an application for tree removal to the Director of Planning and comply with all applicable permit conditions, including replacement plantings if required by the Director of Planning. Because the proposed project would be carried out consistent with the tree ordinance, no conflict would result. This impact would be less than significant. There are no other local policies or ordinances protecting biological resources that would apply to the proposed project,

Mitigation: None required.

Impact Discussion for BIO-6

There are no adopted habitat conservation plans, natural community conservation plans, or other approved plans that apply to the Gloria Way Well site or immediate vicinity. Thus, this criterion is not applicable to the proposed project.

Mitigation: None required.

References – Biological Resources

California Department of Fish and Game (CDFG). 2012. Rarefind 3, California Natural Diversity Database (CNDDB). Records for USGS 7.5 Minute Topographic Quadrangles (Palo Alto – 428A, Mountain View – 428B, Redwood Point – 447C, Newark – 447D). Accessed December 4, 2012.

City of East Palo Alto, 1999. *City of East Palo Alto General Plan*. Conservation and Open Space Element. Figure COS-2 Sensitive Habitats. December 20, 1999.

Environmental Science Associates (ESA), 2012. Letter Memorandum to Cheryl A. McGovern, Environmental Protection Specialist at the U.S. Environmental Protection Agency (WTR-4), "East Palo Alto Gloria Way Well Retrofit Project – Biological Site Assessment for Compliance with Federal Endangered Species Act Section 7 Consultation Requirements." December 27, 2012.

U.S. Fish and Wildlife Service (USFWS) Sacramento Fish and Wildlife Office, 2012. Federal Threatened and Endangered Species List (Document No 121212050926). December 12, 2012a.

U.S. Fish and Wildlife Service (USFWS), 2012. National Wetlands Inventory Map prepared for the Gloria Way Well Retrofit Project. December 14, 2012b.

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3.10 Geology, Soils, and Seismicity

Setting

Geology

Regional Setting

The City of East Palo Alto is situated in the Coast Ranges geomorphic province[1]. The Coast Ranges are dominated by a series of northwest-trending ridges and valleys composed of ancient seafloor rocks. The Santa Cruz Mountains, part of the Coast Ranges, form the mountainous spine of the San Francisco Peninsula and extends from Daly City in the north to 80 miles southeast at the Pajaro River, near Watsonville, where it merges with the southern Gabilan range. Along the San Francisco Peninsula, the eastern foothills of the Santa Cruz Mountains gradually decrease in slope, gently fanning out onto an alluvial plain that eventually merges with tidal wetlands ringing San Francisco Bay. The City of East Palo Alto is underlain by two alluvial fans that border the Bay.

The southwestern portion of the City and neighboring cities (including northern Palo Alto, Menlo Park, Atherton, and portions of Redwood City) are underlain by unconsolidated and semi consolidated deposits of the San Francisquito alluvial fan or cone. The alluvial fan is composed of deposits from the Santa Cruz Mountains and from San Francisco Bay. Fine-grained silts and clays were deposited during periods of rising sea levels when the area was inundated. The deposits underlying the northeastern portion of the City and the bay front area are an interbedded sequence of alluvial fan deposits and marine clays deposited at the distal edge of the Niles Cone Fan. The Niles Cone Fan is composed of sediments deposited westward from the Diablo Range in the East Bay into the lowlands occupied by San Francisco Bay (Todd Engineers, 2012).

Project Site Topography and Geology

The Gloria Way Well site is relatively level, and slopes gently to the north with site elevations ranging from approximately 20 to 21 feet above mean sea level (msl) (USGS, 1973). Surficial geology in the vicinity of the Gloria Way Well site is mapped as Holocene alluvium (USGS, 2006).

A geotechnical investigation has not yet been completed at the project site; however, the well drillers report for the Gloria Way Well reveals subsurface materials consisting of top soil from 0 to 16 feet below the ground surface (bgs), gravel and rock between 16 and 24 feet below the ground surface, and various clay layers extending between 24 and 250 feet bgs (DWR, 1980).

[1] California's geomorphic provinces are naturally defined geologic regions that display a distinct landscape or landforms with unique, defining features based on geology, faults, topographic relief, and climate.

Seismicity

The San Francisco Bay Area region contains both active and potentially active faults[2] and is considered a region of high seismic activity. The USGS estimates that there is a 63 percent probability of a strong earthquake (magnitude 6.7 or higher) occurring on one of the regional faults in the 30-year period between 2003 and 2032, with a 21 percent chance of such an earthquake occurring on the northern San Andreas fault, the closest active fault to the proposed project (USGS, 2008). Strong groundshaking and other earthquake-related phenomena could occur at the project site due to a major earthquake on the San Andreas fault or one of the other regional faults, including the Hayward and Calaveras faults—each of which parallels the San Andreas fault and is capable of generating large (greater than magnitude 6.7) earthquakes.

Magnitude is a measure of the energy released in an earthquake and intensity is a measure of the ground shaking effects at a particular location. The estimated maximum magnitudes, described as moment magnitudes (Mw), on nearby active faults are presented in **Table 3.10-1**.[3] Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking.

TABLE 3.10-1
PRINCIPAL LOCAL AND REGIONAL ACTIVE EARTHQUAKE FAULTS

Fault Zone	Closest Distance from Project Site	Activity	Maximum Moment Magnitude Earthquake
San Andreas	8 miles W	Active	7.5
Hayward	11 miles E	Active	7.0
Calaveras	16 miles E	Active	6.8
San Gregorio-Hosgri	18 miles W	Active	7.5
Greenville-Marsh Creek	30 miles E	Active	6.9
Concord	35 miles NE	Active	6.2

SOURCES: Jennings, 1994; CGS and USGS, 2003.

The Modified Mercalli (MM) intensity scale (**Table 3.10-2**) is commonly used to describe earthquake effects due to ground shaking and in terms of observed effects. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging

2 An "active" fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 11,000 years). A "potentially active" fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not, of course, mean that faults lacking evidence of surface displacement are necessarily inactive.

3 Moment magnitude is related to the physical size of a fault rupture and movement across a fault. Moment magnitude provides a physically meaningful measure of the size of a faulting event.

TABLE 3.10-2
MODIFIED MERCALLI INTENSITY SCALE

Intensity Value	Intensity Description	Average Peak Acceleration
I	Not felt except by a very few persons under especially favorable circumstances.	< 0.0017 g[a]
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	< 0.014 g
III	Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly, vibration similar to a passing truck. Duration estimated.	< 0.014 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	0.014–0.04 g
V (Light)	Felt by nearly everyone, many awakened. Some dishes and windows broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles may be noticed. Pendulum clocks may stop.	0.04–0.09 g
VI (Moderate)	Felt by all, many frightened and run outdoors. Some heavy furniture moved; and fallen plaster or damaged chimneys. Damage slight.	0.09–0.18 g
VII (Strong)	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.	0.18–0.34 g
VIII (Very Strong)	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.	0.34–0.65 g
IX (Violent)	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.65–1.24 g
X (Very Violent)	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 1.24 g
XI (Very Violent)	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII (Very Violent)	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

[a] g (gravity) = 980 centimeters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

from IV to X could cause moderate to significant structural damage.[4] In the vicinity of the project site, characteristic earthquakes on the nearby San Andreas fault could produce violent (IX) MM intensities (ABAG, 2003).

Geologic and Seismic Hazards

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude, sense, and nature of fault rupture can vary for different faults or even along different strands of the same fault. Ground rupture is considered more likely along active faults, which are referenced in Table 3.10-1.

The proposed project site is about 8 miles away from the nearest active fault and is not within an Alquist-Priolo Fault Rupture Hazard Zone, as designated by the Alquist-Priolo Earthquake Fault Zoning Act, or within a Fault Rupture Hazard Zone designated by Santa Clara County (CGS, 1974). No mapped active faults are known to pass through the immediate project region.

Ground Shaking

Ground shaking may affect areas hundreds of miles distant from the location at which the earthquake is centered (epicenter). Historic earthquakes have caused strong ground shaking and damage in the San Francisco Bay Area, the most recent being the 7.1 (Richter magnitude) Loma Prieta Earthquake in October 1989. The epicenter for this event was approximately 30 miles south of the project site and caused strong ground shaking for about 20 seconds, resulting in varying degrees of structural damage throughout the San Francisco Bay Area.

Underlying soils in areas located relatively distant from faults can intensify ground shaking. Portions of the Bay Area that experienced the worst structural damage were not those closest to the fault but rather, in areas with soils that magnified the effects of ground shaking.[5] A common measure of ground motion is peak ground acceleration, which is the largest value of horizontal acceleration obtained from a seismograph. According to the California Geological Society (CGS, formerly known as California Division of Mines and Geology) probabilistic seismic hazard map, estimated peak ground acceleration in the vicinity of the project site is approximately 0.5 (CGS, 2012a). This would be felt as a Intensity Scale VIII, very strong event under the Modified Mercalli Scale. A probabilistic seismic hazard map represents the severity of ground shaking from earthquakes that geologists and seismologists agree could occur, but has a 90 percent chance of not exceeding in 50 years (an annual probability occurrence of 1 in 475). It is "probabilistic" in

4 The damage level represents the estimated overall level of damage that will occur for various MM intensity levels. The damage, however, will not be uniform. Some buildings will experience substantially more damage than this overall level, and others will experience substantially less damage. Not all buildings perform identically in an earthquake. The age, material, type, method of construction, size, and shape of a building all affect its performance.

5 Ground shaking can be described in terms of peak acceleration, peak velocity and displacement of the ground. Areas that are underlain by bedrock tend to experience less ground shaking than those underlain by unconsolidated sediments such as artificial fill. Peak ground acceleration is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. To illustrate, one "g" of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

the sense that the analysis takes into consideration the uncertainties in the size and location of earthquakes and the resulting ground motion that can affect a particular site, and expresses the probability of exceeding a certain ground motion.

Liquefaction

Liquefaction is the process by which granular soil, like sand, behaves like a dense fluid when subjected to prolonged shaking during an earthquake. Soils that are most susceptible to liquefaction are clean, loose, saturated, fine-grained sands that lie within approximately 50 feet of the ground surface. The well drillers report for the Gloria Way Well indicates subsurface materials are comprised primarily of clay to a depth of 250 feet bgs (DWR, 1980). However, liquefaction Scenario Shaking Maps prepared by the Association of Bay Area Governments (ABAG) indicate there is a high liquefaction hazard in the project vicinity (ABAG, 2012).

Earthquake-Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid rearrangement, compaction, and settling of subsurface materials (particularly loose, non-compacted, and variable sandy sediments). Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill or Bay Mud. Although a geotechnical investigation has not been prepared for the site, based upon the well drillers report and the geographic location of the site relative to Bay Muds (USGS, 2006), earthquake-induced settlement is not likely to occur.

Expansive Soils

Expansive soils possess a “shrink-swell” behavior. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may occur over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. The well drillers report for the Gloria Way Well indicates clay soils underlie the site; expansive soils are therefore likely present on the project site.

Differential Settlement

If not properly engineered, loose, soft, soils comprised of sand, silt, and clay have the potential to settle after a building or other load is placed on the surface. Differential settlement of the loose soils generally occurs slowly, but over time can amount to more than most structures can tolerate. Differential settlement can damage buildings and their foundations, roads and rail lines, and result in breakage of underground pipes.

Sites underlain by poorly engineered artificial fill and compressible Bay Mud are typically susceptible to differential settlement. Although a geotechnical investigation has not been prepared

for the site, based upon the well drillers report and the geographic location of the site relative to Bay Muds (USGS, 2006), differential settling is not likely to occur.

Soil Erosion and Soil Loss

Erosion is the wearing away of soil and rock by processes such as mechanical or chemical weathering, mass wasting, and the action of waves, wind and underground water. Soils containing high amounts of silt or clay can be easily erodible, while sandy soils are less susceptible. Excessive soil erosion can eventually lead to damage of building foundations and roadways. At the project site, areas that are susceptible to erosion are those that contain fine grained material and also areas where the soil would be exposed during the construction phase. Typically, the soil erosion potential is reduced once the soil is graded and covered with concrete, structures or asphalt. The project site is currently developed with water supply facilities and infrastructure. The removal of existing facilities and earthwork during construction would disturb and expose soils, potentially resulting in soil erosion and soil loss.

Subsidence

Land subsidence occurs worldwide, including in California. The principal causes of subsidence occurrence in California are deep-seated compaction of unconsolidated sediments caused by extraction of subsurface fluids, oils, water and gas. Aquifer-system compaction, related to groundwater pumping and extensive water-level declines, is responsible for most of the subsidence in the state. Areas having a greater abundance of fine-grained sediments, such as the northeastern part of the City, are more susceptible to land subsidence than the southwestern part of the City, because of the greater compressibility of these sediments. Land subsidence can result in temporary or permanent lowering of the landform. Subsidence can excacerbate flooding and damage infrastructure. Overdrafting of groundwater aquifers commonly leads to permanent land subsidence.

As water levels decrease, more load is placed on the solid structure of the aquifer, causing compaction. Aquifer-system deformation can be fully reversible (elastic) or largely permanent (inelastic). Elastic deformation occurs when sediments compress as pore pressure decreases, and expand equally as pore pressure increases. The consequent subsidence and rebound of the land surface commonly occur seasonally, coincident with groundwater discharge and recharge. The magnitudes of elastic subsidence and rebound are equivalent and typically small, ranging from about 2 x 10-6 to 8 x 10-6 of subsidence (or rebound) per foot of aquifer system thickness per foot of head change.

Inelastic compaction results only when the sediments are compressed beyond their previous maximum stress (preconsolidation stress). The preconsolidation stress, or the effective stress threshold at which inelastic compaction begins, generally is exceeded when groundwater levels decline past historic low levels. In these stress ranges, the materials compress inelastically, and the compaction and subsequent land subsidence are largely permanent and irreversible, despite any subsequent water recovery. Because clays are often highly compressible, and subject to rearrangement of the grains, depressurization of clay aquitard strata results in more compaction and subsidence than depressurization of less compressible, coarser-grained deposits.

Slope Failure Hazards

Ground failure is dependent on the slope and geology as well as the amount of rainfall, excavation, or seismic activities. A slope failure is a mass of rock, soil, and debris displaced down a slope by sliding, flowing, or falling. Steep slopes and downslope creep of surface materials characterize landslide-susceptible areas. As surface elevations at the project site are relatively level (less than one percent slope), there is no hazard of slope failure at the project site.

Regulatory Framework

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zones Act), signed into law in December 1972, requires the delineation of zones along active faults in California. The purpose of the Alquist-Priolo Act is to regulate development on or near fault traces to reduce the hazard of fault rupture and to prohibit the location of most structures for human occupancy across these traces. Cities and counties must regulate certain development projects within the zones, which includes withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement. Surface fault rupture is not necessarily restricted to the area within a Fault Rupture Hazard Zone, as designated under the Alquist-Priolo Act. As noted, the project site is not located within an Alquist-Priolo Earthquake Fault Zone.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act (SHMA) enacted by the California legislature in 1990, was developed to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and other hazards caused by earthquakes. SHMA requires the State Geologist to delineate various seismic hazards zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation of the site has to be conducted and appropriate mitigation measures incorporated into the project design. The CGS Special Publication 117, adopted in 1997 by the CGS in accordance with the SHMS, constitutes guidelines for evaluating seismic hazards other than surface faulting, and for recommending mitigation measures as required by Public Resources Code Section 2695(a). The project site is not located within a Seismic Hazard Zone (CGS, 2012b).

California Building Code

The California Building Code (CBC), which is codified in CCR Title 24, Part 2, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, egress facilities, and general building stability. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction.

The 2010 CBC is based on the 2009 International Building Code. In addition, the CBC contains necessary California amendments that are based on the American Society of Civil Engineers (ASCE) Minimum Design Standards 7-05. ASCE 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion in building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, all of which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site, and ranges from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC.

City of East Palo Alto Excavation, Grading, Filling, and Clearing Requirements

The City of East Palo Alto ordinances related to Excavation, Grading, Filling, and Clearing (Title 15, Chapter 15.48) require preparation of a grading plan for activities involving grading, and a land clearing permit for the removal of vegetation when the land area to be cleared is 5,000 square feet or greater. To comply with grading and land clearing permit requirements, applicants must submit a site-specific geotechnical report and a grading plan that specifies the location and nature of known or suspected soil or geologic hazard areas and details measures that will be implemented for erosion and sediment control. Depending on site conditions and the nature of earthmoving activities, these requirements may be modified or waived by the Director of Public Works, as appropriate.

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
GEOLOGY, SOILS, AND SEISMICITY —					
Would the project:					
Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:					
GE-1a	Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)	☐	☐	☒	☐
GE-1b	Strong seismic ground shaking?	☐	☐	☒	☐
GE-1c	Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐

	Potentially Significant and Unavoidable	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact or Not Applicable
GE-1d Landslides?	☐	☐	☐	☒
GE-2 Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
GE-3 Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
GE-4 Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
GE-5 Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Impact Discussion for GE-1a

The project site is located 8 miles from the San Andreas Fault. As discussed above, no active or potentially active faults are located on or near the project site, nor does the project lie within an Alquist-Priolo Earthquake Fault Hazard Zone. The potential for the project site to be affected by surface fault rupture is very low. Therefore, the impact is considered less than significant.

Mitigation: None required.

Impact Discussion for GE-1b and GE-1c

The proposed project is located in the San Francisco Bay Area, which, due to the presence of the San Andreas Fault System, is a region of significant seismic activity. Recent studies sponsored by the United States Geological Survey (USGS) estimate that there is a 63 percent likelihood of a magnitude 6.7 or higher earthquake occurring in the Bay Area in the next 30 years. The project site could experience a range of ground shaking effects during an earthquake on one of the active earthquake faults in the San Francisco Bay Area. The intensity of such an earthquake event would depend on the causative fault and the distance to the epicenter, the moment magnitude and the duration of shaking. Unconsolidated alluvial material underlying the project site could intensify ground shaking effects in the event of an earthquake on one of the aforementioned faults. Due to its close proximity to the project site, the San Andreas Fault is likely to generate the most significant levels of ground shaking. Ground shaking intensities from a major seismic event on the San Andreas Fault could generate ground motion approaching peak ground accelerations of approximately 0.5.

Earthquakes and ground shaking in the Bay Area are unavoidable and expected to occur at some time during the life of the project. Although some structural damage is typically not avoidable,

building codes and local construction requirements have been established to protect against building collapse and major injury during a seismic event. The proposed project would comply with applicable design requirements of the 2010 California Building Code, and would therefore be designed to comply with current seismic standards. Further, in the event of strong ground shaking, damage to the proposed improvements would expose few people, if any, to adverse effects. Therefore, impacts related to seismically induced ground shaking would be less than significant.

Mitigation: None required.

Impact Discussion for GE-1d

The project site is relatively level (less than 1 percent slope), and slopes gently towards San Francisco Bay on a broad alluvial fan. There are no hillsides or other topographic features near the site. Therefore, no impact related to landslides would result.

Mitigation: None required**.**

Impact Discussion for GE-2

The majority of soil erosion on construction sites is caused by precipitation and storm water runoff, although wind erosion can increase erosion rates, especially in loose, fine-grained materials. In addition to causing sedimentation problems in storm drain systems, rapid water and wind erosion can create deep gullies that increase in size and undermine engineered soils beneath foundations and paved surfaces.

Unless waived by the Director of Public Works, the construction contractor will be required to prepare a grading plan that includes erosion control features to be implemented during construction. Given site slopes, the nature of construction activities, and the maximum disturbance area of up to 0.12 acres, potential soil erosion hazards associated with project construction are considered less than significant.

Mitigation: None required.

Impact Discussion for GE-3

As stated above, the project site is relatively level (less than 1 percent slope). Construction of the proposed improvements would involve up to 5 feet of excavation for construction of the two pump stations and installation of 200 linear feet of pipeline to connect to the existing water

distribution system along Gloria Way and Bay Road, and up to 3 feet of excavation for all other improvements. As appropriate, excavations would be sloped or shored to prevent damage to existing structures and infrastructure. No impact related to unstable units or soils would result during construction.

The proposed pump houses, electrical/chemical building, and prefabricated facilities such as tanks and pressure filters would be supported on concrete slabs for stability. In the absence of a site-specific geotechnical investigation, it is assumed that site soils could exhibit soils hazards such as lateral spreading or liquefaction. However, with adherence to the City's Excavation, Grading, Filling, and Clearing Regulations, impacts related to liquefaction and lateral spreading would be less than significant.

As described above in the Setting section, subsidence occurs when the pore pressure of water in the aquifer and aquitard systems is lowered during groundwater extraction and the soil structure compresses and settles. Land subsidence of more than two feet was measured in Palo Alto and East Palo Alto between 1934 and 1967. Subsidence in the Atherton during the same period was reportedly between 0.1 and 0.5 feet. Although the subsidence that did occur may have partially reversed, these observed historical conditions indicate a potential for subsidence, should pumping and groundwater elevations resume to historical withdrawals (Todd Engineers, 2012). It is estimated that annual pumping from the San Francisquito Creek Groundwater Subbasin amounted to about 7,500 acre-feet per year (AFY) prior to 1962 (Todd Engineers, 2005).

Historical low water levels (as measured in major aquifers) have been used as a guide of allowable pressure minima in the system; this is largely due to the fact that these are the only zones where abundant data are available. However, this approach assumes that the entire aquifer/aquitard system has fully equilibrated to these lower pressures – this is rarely the case. Due to their low permeability and relatively high compressibility, aquitards drain very slowly toward equilibrium with adjacent aquifers. Although some subsidence is expressed as soon as water levels begin to decline, full expression of subsidence within thicker aquitards can take a fairly long time, sometimes on the order of tens to hundreds of years or longer. This lag time in pore pressure equilibration is a function of the thickness of the aquitards and their degree of isolation from pumped aquifer zones. Because this equilibrium takes a long time to reach, as water levels simply approach historic lows, the possibility of inelastic subsidence increases significantly. Historic low water elevations can therefore be used as a guide to the limit of elastic responses, but not as an absolute reference.

Project implementation would increase pumping from the Gloria Way Well from 5 AFY to 420 AFY. Existing pumping by other groundwater users, in combination with the proposed pumping at the Gloria Way Well, is expected to be far less than the pumping that occurred in the 1950s. Therefore, the potential for proposed pumping from the Gloria Way Well to increase the risk of subsidence is considered less than significant.

Mitigation: None necessary.

Impact Discussion for GE-4

Problematic soils such as expansive soils can cause damage to structures and buried utilities. Expansion and contraction of expansive soils in response to changes in moisture content can lead to differential and cyclical movements that can cause damage and/or distress to structures and equipment.

Groundwater elevations in the vicinity of the Gloria Way Well site are relatively shallow. Although it is anticipated that excavation activities would occur above water table, if groundwater elevations are high during construction, pipeline installation could require temporary dewatering and subgrade stabilization. Project construction activities would be conducted consistent with the requirements of the City's Excavation, Grading, Filling, and Clearing Regulations, which requires the preparation of a site-specific geotechnical report and a grading plan that specifies the location and nature of known or suspected soil or geologic hazard areas. Further, the proposed improvements would be designed and constructed in accordance with standard engineering techniques and California Building Code guidelines to avoid or minimize potential damage from compressible or expansive soils. Therefore, impacts related to expansive soils would be less than significant.

Mitigation: None required.

Impact Discussion for GE-5

The proposed project does not involve the use of septic tanks or alternative wastewater disposal systems; therefore, no impact would occur.

Mitigation: None required.

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3.11 Hydrology and Water Quality

This section addresses potential impacts to surface water hydrology, groundwater resources, and water quality associated with implementation of the proposed project.

Setting

Climate

The San Francisco Bay region has a Mediterranean climate, characterized by dry, warm summers and mild winters. The area receives most of its rainfall between November and June and has its warmest temperatures in July and August. Average annual rainfall in the City of East Palo Alto is approximately 15 inches (WRCC, 2013).

Surface Water Hydrology

San Francisquito Creek Watershed and Alluvial Fan

The project site is located within the San Francisquito Creek watershed. The San Francisquito Creek watershed encompasses approximately 42 square miles and includes portions of East Palo Alto, Menlo Park, Palo Alto, Portola Valley, and Woodside. San Francisquito Creek originates in the Santa Cruz Mountains and discharges to the San Francisco Bay, approximately 1.25 mile southeast of the project site.

Historically, during large storm and tidal events, San Francisquito Creek overtopped its banks and deposited sand, silt, and gravel carried from the hills across the Baylands area. For thousands of years, this process, coupled with the constantly changing course of the lower portions of the creek, built up thick, fan-shaped sedimentary deposits of sand and gravel. The San Francisquito Creek alluvial fan encompasses 22 square miles, including all of East Palo Alto and portions of the Menlo Park and Palo Alto (IRM, 2011).

In modern times and during severe storm events, the lower reach of San Francisquito Creek between Highway 101 and the San Francisco Bay continues to overtop its banks, creating flood hazards in highly urbanized areas. In February 1998, a devastating flood damaged homes, businesses, and government buildings, and flooded the Palo Alto Airport, municipal golf course, and portions of Highway 101 (PWA, 2009). Most recently, in December 2012, elevated streamflows caused by a series of large storms resulted in severe flooding in low-lying areas of East Palo Alto and Palo Alto.

Site Topography and Drainage

The 0.12-acre Gloria Way Well site is relatively level, sloping very gently (less than one percent) to the north. Site elevations range from approximately 20 to 21 feet above mean sea level (msl) (USGS, 1973). The San Francisco Bay is located approximately one mile east of the project site. San Francisquito Creek, the closest creek to the project site, flows west-to-east approximately one

mile to the south. The project site is within the San Francisquito Creek watershed. Stormwater runoff generated at the site is conveyed via the municipal storm drain system to San Francisquito Creek.

Flood Hazards

The Federal Emergency Management Agency (FEMA) delineates regional flooding hazards as part of the National Flood Insurance Program. The official FEMA Flood Insurance Rate Maps (FIRMs) encompassing the project vicinity were most recently updated in October 2012. The project site is not located within a designated special flood hazard area (FEMA, 2012).

Tsunami

Tsunamis (seismic sea waves) are long period waves that are typically caused by underwater disturbances (landslides), volcanic eruptions, or seismic events. Areas that are highly susceptible to tsunami inundation tend to be located in low-lying coastal areas such as tidal flats, marshlands, and former bay margins that have been artificially filled but are still at or near sea level. As the project site is located at a topographic elevation of 20 to 21 feet above msl and is approximately one mile from the shoreline of San Francisco Bay, tsunami hazards are remote.

Seiche

A seiche is a free or standing wave oscillation(s) of the surface of water in an enclosed or semi-enclosed basin, such as San Francisco Bay, that may be initiated by an earthquake. The project site is not located near an enclosed or semi-enclosed water body. Therefore, there are no hazards associated with seiches at the project site.

Groundwater

Geology and Aquifer Zones

The Santa Clara Valley Groundwater Basin occupies a structural trough between the Diablo Range to the east and the Santa Cruz Mountains to the west. The principal water-bearing formations of the Santa Clara Valley Groundwater Basin are unconsolidated to semi-consolidated alluvium composed of gravel, sand, silt, and clay. The deposits underlying the northeastern portion of the City of East Palo Alto and the bay front area are an interbedded sequence of marine clay deposits and alluvial fan deposits formed by Alameda Creek as it flows into the San Francisco Bay; together, these deposits comprise the Niles Cone Groundwater Subbasin. The southwestern portion of the City, including the Gloria Way Well site, and surrounding cities (northern Palo Alto, Menlo Park, Atherton, and portions of Redwood City) are underlain by unconsolidated and semi-consolidated deposits of the San Francisquito alluvial fan. In general, the boundaries of the San Francisquito Groundwater Subbasin correspond to the extent of the San Francisquito Creek alluvial fan (Todd Engineers, 2012).

The San Francisquito Creek Groundwater Subbasin is composed of coarse- and fine-grained alluvial deposits of San Francisquito Creek. On average, the thickness of water-bearing sediments

in the subbasin range from less than 400 feet at the northern end of the subbasin beneath Redwood City to more than 1,000 feet south of Palo Alto. The groundwater system includes a shallow aquifer and a deep aquifer beneath a laterally extensive confining clay layer (i.e., the regional aquitard). The deep aquifer consists of an upper and lower zone. Storativity values indicate the shallow aquifer is unconfined and the deeper aquifer system is semi-confined (Todd Engineers, 2005).

Groundwater Elevations and Flow

Under natural conditions, groundwater flow in the San Francisquito Creek Groundwater Subbasin is from the edge of the basin near the bedrock uplands toward San Francisco Bay to the northeast. In the early 1900s this natural groundwater flow pattern was reversed when pumping and periodic drought lowered groundwater elevations below sea level. Lowered groundwater levels induced saline water from the San Francisco Bay inland into the aquifer system and resulted in ground subsidence as the result of dewatering and compaction of clay layers. It is estimated that annual pumping from the San Francisquito Creek Groundwater Subbasin amounted to about 7,500 acre-feet per year (AFY) prior to 1962 (Todd Engineers, 2005).

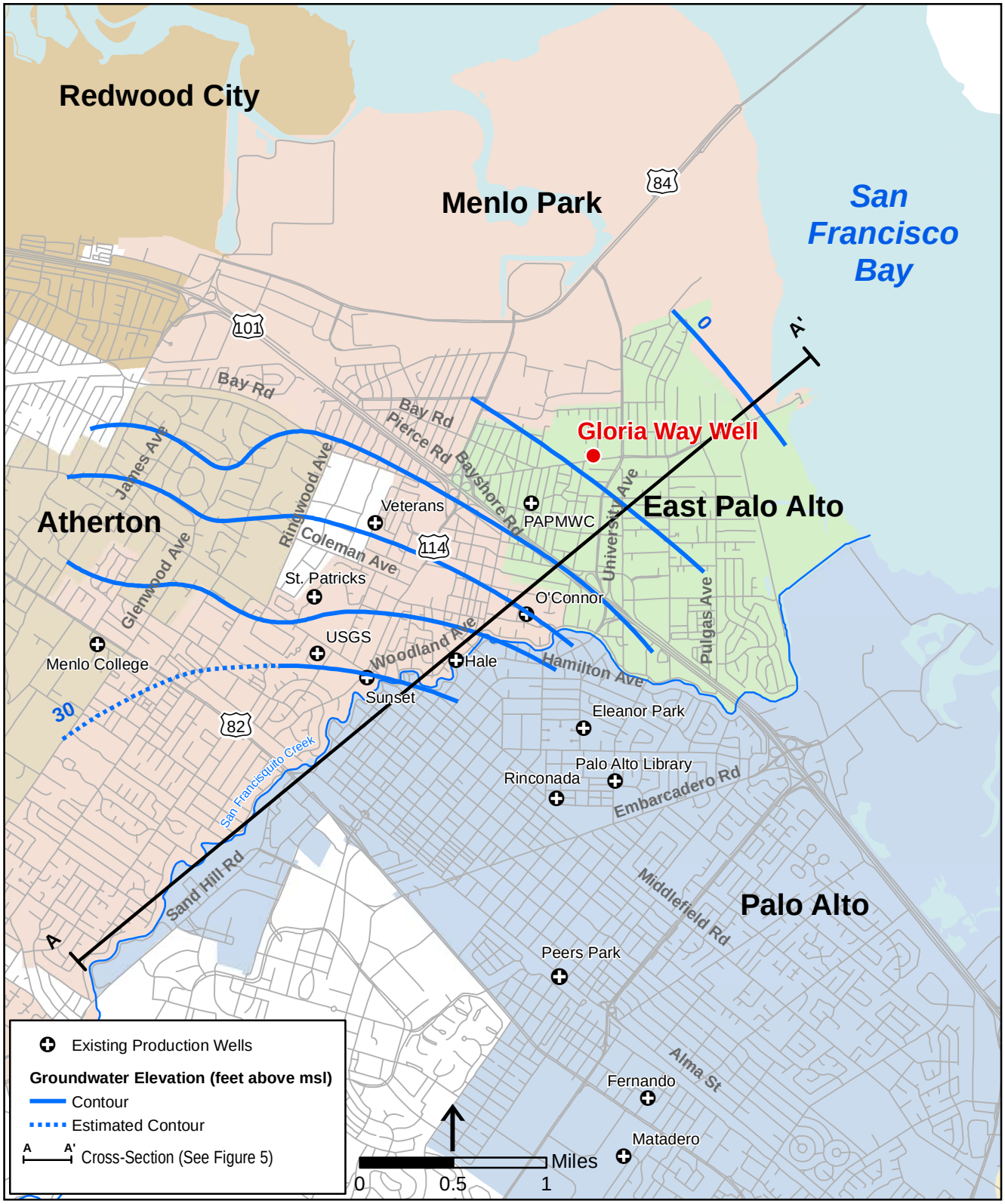
Groundwater extraction from the area declined significantly after the importation of Hetch Hetchy water supplies in the 1960s. As a result, groundwater elevations have been steadily increasing and the natural groundwater gradient has been restored. Between 1962 and 1987, groundwater elevations in the City of Palo Alto rose more than 150 feet to levels comparable to those in the early1900s. Maintaining groundwater gradients toward the Bay is key to preventing saline intrusion from the Bay and land subsidence (Todd Engineers, 2005).

Existing groundwater elevations at the Gloria Way Well currently cannot be measured because the tubing in the well casing is clogged. The last measurement of groundwater levels at the well was taken in December 2003, when the groundwater elevation at the Gloria Way Well was measured at 4 feet above msl. However, if the proposed project is implemented, the tubing in the well casing would be replaced so that water levels in the well can be measured in the future.

Currently, there is no centralized database of groundwater elevation data for the San Francisquito Creek Groundwater Subbasin. However, generalized groundwater elevation and flow information has been published by San Mateo County, Santa Clara Valley Water District (SCVWD), California Department of Water Resources (DWR), and the U.S. Geological Survey (USGS). Published groundwater elevation data from these sources were used to develop a conceptual model of historical and current groundwater flow conditions in the project area (see **Figure 4**) (Todd Engineers, 2012).

San Francisquito Creek Groundwater Subbasin Water Balance

Estimating the quantity of groundwater that can be sustainably developed from the San Francisquito Creek Groundwater Subbasin requires evaluation of all the significant inflows and outflows of water from the subbasin. A long-term balance between groundwater recharge and discharge is necessary to prevent saline intrusion and subsidence. Due to limited data on current groundwater extractions and groundwater elevations, a detailed evaluation of the water balance in the subbasin



SOURCE: Todd Engineers, 2012

Gloria Way Well Retofit Project . 2011859

Figure 4

Generalized Groundwater Elevations

cannot be conducted at this time. However, rough estimates[1] of current recharge and discharge were developed for the *Gloria Way Water Well Production Alternatives Analysis & East Palo Alto Water Security Feasibility Study* (Todd Engineers, 2012). The estimates, which rely on a number of assumptions, are summarized below.

Sources of groundwater recharge to the subbasin include percolation from landscape irrigation, leakage of water and sewer lines, infiltration from San Francisquito Creek and Lake Lagunita, percolation of rainfall, and subsurface groundwater inflow from upland areas. Based on estimates of: irrigation return flow; pipe leakages; streamflow losses from San Francisquito Creek; the recharge value for Lake Lagunita; and percolation of precipitation, recharge to the subbasin is estimated to be between 5,000 AFY and 10,090 AFY.

TABLE 3.11-1
EXISTING GROUNDWATER PUMPING

	Annual Pumping (AFY)
Atherton Private and Institutional Wells[a]	710
Private Wells (East Palo Alto, Palo Alto, Menlo Park, and Redwood City)[a]	170
O'Connor Tract Cooperative Water Company[b]	280
Palo Alto Park Mutual Water Company[c]	523
USGS, St Patricks Seminary, Menlo College, and Veterans[a]	500
Stanford University[a]	342
City of East Palo Alto - Gloria Way Well[d]	5
City of Menlo Park[e]	0
City of Palo Alto[f]	0
City of Redwood City[g]	0
TOTAL =	**2,530**

SOURCES:

a Todd Engineers, 2012.
b O'Connor Tract Co-Operative Water Co., 2013.
c Todd Engineers, 2012.
d IRM, 2010; City of East Palo Alto, 2012.
e City of Menlo Park, 2011.
f City of Palo Alto, 2011.
g City of Redwood City, 2011.

The major components of groundwater discharge in the subbasin are groundwater pumping and consumptive use, subsurface outflow to San Francisco Bay, and discharges to San Francisquito Creek in areas where the water table intersects and flows into the creek channel (i.e., discharges to stream baseflow). Current total annual groundwater pumping by municipal, industrial, institutional, and private users in the subbasin is approximately 2,530 AFY. Based on the

[1] The estimates of existing pumping presented in the *Gloria Way Water Well Production Alternatives Analysis & East Palo Alto Water Security Feasibility Study* have been updated to reflect updated pumping information for the O'Connor Tract Cooperative Water Company and existing pumping from Gloria Way Well (for non-potable uses).

assumption that 95 percent of consumptive use leaves the subbasin (2,400 AFY), and based on estimates regarding groundwater discharge to San Francisco Bay and adjacent groundwater subbasins (700 AFY), total discharge was estimated to be approximately 3,100 AFY.[2] The rough estimates of recharge and discharge indicates that recharge (5,000 AFY to 10,900 AFY) currently exceeds the discharge (3,100 AFY). However, available groundwater elevation data for the area, albeit limited, indicates that groundwater levels and storage are relatively stable. This suggests actual recharge is more likely to be represented by the lower estimate (5,000 AFY), and/or that subsurface outflow is greater to the Bay or to the lower reach of San Francisquito Creek (Todd Engineers, 2012).

Groundwater Quality

Groundwater quality is influenced by a number of factors, including natural geochemical properties and flow within hydrogeologic formations, groundwater pumping, land use practices, and accidental releases of contaminants into the environment. Natural groundwater quality within the San Francisquito Creek Groundwater Subbasin varies laterally and with depth. Groundwater extracted from the shallow aquifer tends to be similar in composition to recharge water (surface water, precipitation, imported water). Groundwater extracted from the deep aquifer varies in composition as a result of contact and residence time with formation sediments (Todd Engineers, 2012).

In general, groundwater in the subbasin tends to be somewhat hard (i.e., high in calcium carbonate) with levels of chloride, iron, manganese, specific conductance, and total dissolved solids (TDS) that exceed secondary maximum contaminant levels (MCLs) in some wells. Elevated levels of these constituents make groundwater undesirable for potable use for aesthetic rather than health reasons and thus secondary MCLs apply. Aesthetic concerns include problems with soap lathering, taste, odor, and plumbing/clothing staining. Primary MCLs are health-based water quality criteria (Todd Engineers, 2012).

Generally, groundwater quality in the San Francisquito Creek Groundwater Subbasin is acceptable for both potable and irrigation uses. Groundwater pumped from wells operated by the O'Connor Tract Cooperative Water Company in Menlo Park, approximately 0.4 mile southwest of the Gloria Way Well, meets all drinking water quality standards without the need for additional treatment. Groundwater from wells operated by the Palo Alto Park Mutual Water Company (PAPMWC) in East Palo Alto, approximately 0.9 mile southwest of the Gloria Way Well, is chlorinated and blended to meet drinking water standards (Todd Engineers, 2012).

As described in Section 2.2.1 in Chapter 2, Project Description, shortly after the Gloria Way Well was brought online in 1981, residents began to complain that the water had a strange taste and odor as a result of elevated concentrations of iron and manganese in the water. For this reason, the well was disconnected from the City's water distribution system in 1989 and has since been used solely for nonpotable purposes. The results of groundwater water quality sampling conducted on May 22, 2012 indicates groundwater extracted from the Gloria Way Well meets all primary drinking water standards but exceeds secondary drinking water standards for manganese, chloride, specific

[2] Due to data limitations, discharge to stream baseflow was not estimated and, therefore, is not factored into the estimated total discharge.

conductance, and total dissolved solids (TDS). Historical and recent water quality sampling at the Gloria Way Well confirms that the manganese concentration in groundwater pumped from the well is consistently above the secondary maximum contaminant level (MCL) of 0.05 milligrams per liter (mg/L). Although iron has been mentioned as a potential concern during the 1980s when the Gloria Way Well was online, with the exception of a single sampling event in 1986 when the secondary MCL for iron was exceeded in 1986, iron concentrations have otherwise been measured within the secondary MCL (Todd Engineers, 2012).

Regulatory Framework

Clean Water Act

The federal Clean Water Act, enacted by Congress in 1972 and amended several times since its inception, is the primary federal law regulating water quality in the U.S. and forms the basis for several state and local laws throughout the country. Its objective is to reduce or eliminate water pollution in the nation's rivers, streams, lakes, and coastal waters. The Clean Water Act gave the U.S. Environmental Protection Agency (U.S. EPA) the authority to implement federal pollution control programs such as setting water quality standards for contaminants in surface water, establishing wastewater and effluent discharge limits for various industry categories, and imposing requirements for controlling nonpoint-source pollution. At the federal level, the Clean Water Act is administered by the U.S. EPA and U.S. Army Corps of Engineers Corps. At the state and regional levels, the act is administered and enforced by the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs). The SWRCB is governed by the Porter-Cologne Water Quality Act (Division 7 of the California Water Code), which establishes the legal framework for its water quality control activities. Much of the implementation of the SWRCB's responsibilities is delegated to the nine RWQCBs.

NPDES Waste Discharge Regulations

In 1987, amendments to the Clean Water Act added Section 402, which established a framework to protect water quality by regulating industrial, municipal, and construction-related sources of pollutant discharges to waters of the United States. In California, the NPDES program is administered by the SWRCB through the RWQCBs and requires that municipalities obtain permits that outline programs and activities to control wastewater and stormwater pollution.

The NPDES program provides two levels of control for the protection of water quality: technology-based limits and water-quality-based limits. Technology-based limits are based on the ability of dischargers to treat the water, while water-quality-based limits are required if technology-based limits are not sufficient to protect the water body. The water-quality-based effluent limitations required to meet water quality criteria in the receiving water are based on the National Toxics Rule, the California Toxics Rule, and the Basin Plan. NPDES permits must also incorporate TMDL waste load allocations when they are developed.

NPDES Construction General Permit

The federal Clean Water Act prohibits discharges of stormwater from construction projects unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) construction general permit. The SWRCB, the permitting authority in California, adopted an NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (construction general permit), (Order No. 2009-0009, as amended by Order No. 2010-0014). The Order applies to construction sites that include one or more acre of soil disturbance. Since project construction activities would only disturb approximately 0.12 acre of land, the project is not subject to NPDES Construction General Permit Requirements.

San Mateo Countywide Stormwater Pollution Prevention Program

The San Mateo Countywide Stormwater Pollution Prevention Program (SMCSPPP) emphasizes the integration of stormwater management features into streets and parking lots as part of a new urban landscape and provides resources and technical guidance on how to design, permit, and maintain post-construction stormwater controls in order to meet the current stormwater management requirements mandated in Provision C.3 of the Countywide Municipal Stormwater Permit. An emphasis is placed on the integration of stormwater features such as grassy swales and bioretention facilities into areas such as streetscapes or parking facilities using low impact development techniques.

Safe Drinking Water Act

The federal Safe Drinking Water Act, passed by Congress in 1974 and amended in 1986 and 1996, is the nation's primary law regulating drinking water quality and is implemented by the U.S. Environmental Protection Agency (U.S. EPA). Implementation and enforcement of both the federal and California Safe Drinking Water Acts are under the jurisdiction of the California Department of Public Health (CDPH) (formerly the California Department of Health Services). The U.S. EPA sets national primary drinking water standards (i.e., Maximum Contaminant Levels) to protect against both naturally occurring and man-made contaminants that may be found in drinking water. CDPH sets state primary drinking water standards that are at least as stringent as, and sometimes more stringent than, those developed by the U.S. EPA. Primary drinking water standards are based on health considerations for contaminants that are known to cause harmful health effects; secondary drinking water standards are set for "nuisance contaminants" that may cause physical or aesthetic problems and are not directly harmful. Drinking water regulations are set forth in the California Code of Regulations, Titles 17 and 22.

City of East Palo Alto Excavation, Grading, Filling, and Clearing Requirements

The City of East Palo Alto ordinances related to Excavation, Grading, Filling, and Clearing (Title 15, Chapter 15.48) require preparation of a grading plan for activities involving grading, and a land clearing permit for the removal of vegetation when the land area to be cleared is 5,000 square feet or greater. To comply with grading and land clearing permit requirements, applicants must submit a site-specific geotechnical report and a grading plan that specifies the

location and nature of known or suspected soil or geologic hazard areas and details measures that will be implemented for erosion and sediment control. Depending on site conditions and the nature of earthmoving activities, these requirements may be modified or waived by the Director of Public Works, as appropriate.

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
HYDROLOGY AND WATER QUALITY — Would the project:					
HYD-1	Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
HYD-2	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☒	☐	☐
HYD-3	Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
HYD-4	Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☐	☐	☒	☐
HYD-5	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
HYD-6	Otherwise substantially degrade water quality?	☐	☐	☒	☐
HYD-7	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
HYD-8	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☒
HYD-9	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
HYD-10	Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Impact Discussion for HYD-1

Construction activities at the Gloria Way Well site would result in up to 0.12 acre of total soil disturbance. Although the proposed improvements would be sited on relatively level ground, construction activities, if not properly managed, could increase soil erosion and adversely affect water quality in downstream receiving water bodies.

Unless waived by the Director of Public Works, the construction contractor would be required to prepare a grading plan that includes erosion control features to be implemented during construction. Implementation of the erosion control plan would serve to protect water quality in downstream receiving water bodies. Given site topography, the nature of construction activities, and the maximum disturbance area of up to 0.12 acres, potential soil erosion hazards associated with project construction are considered less than significant.

In addition, construction activities would require the use of certain potentially hazardous materials such as fuels, oils, solvents, lead solder, and glues. Storage and use of hazardous materials at construction sites and staging areas could result in the accidental release of small quantities of hazardous materials which could degrade soil and groundwater quality, and/or surface water quality in nearby creeks or downstream water bodies. The potential for an accidental hazardous materials release during construction to affect the public or the environment represents a potentially significant impact. However, with implementation of **Mitigation Measure HY-1 (Construction Best Management Practices)**, the potential impact associated with an accidental hazardous materials release during construction would be reduced to a less-than-significant level.

Mitigation Measure HYD-1: Construction Best Management Practices.

The City shall incorporate into contractor specifications the requirement that, in addition to the erosion control plan, the construction contractor(s) implement construction Best Management Practices (BMPs) to minimize the accidental release of hazardous construction materials during construction. The following BMPs shall be required:

Water Quality Best Management Practices

- Place drip pans under construction vehicles and all parked equipment
- Check construction equipment for leaks regularly
- Refuel vehicles and equipment at least 100 feet from storm drains to minimize the risk of run-on, runoff, and spills that could affect water bodies
- Conduct fueling in paved and curbed areas to contain spills if this is possible; if not, refuel over drip pans or absorptive mats
- Cover all storm drain inlets when paving or applying seals or similar materials to prevent the offsite discharge of these materials

Waste Management and Hazardous Materials Pollution Control

- Require secondary containment of hazardous construction chemicals to prevent the accidental release of these chemicals to the stormwater drainage system

- Remove trash and construction debris from the project site at regular intervals
- Store all hazardous materials in an area protected from rainfall and stormwater run-on and prevent the offsite discharge of leaks or spills
- Train construction personnel in proper material delivery, handling, storage, cleanup, and disposal procedures
- Document compliance with storage and handling requirements for hazardous materials

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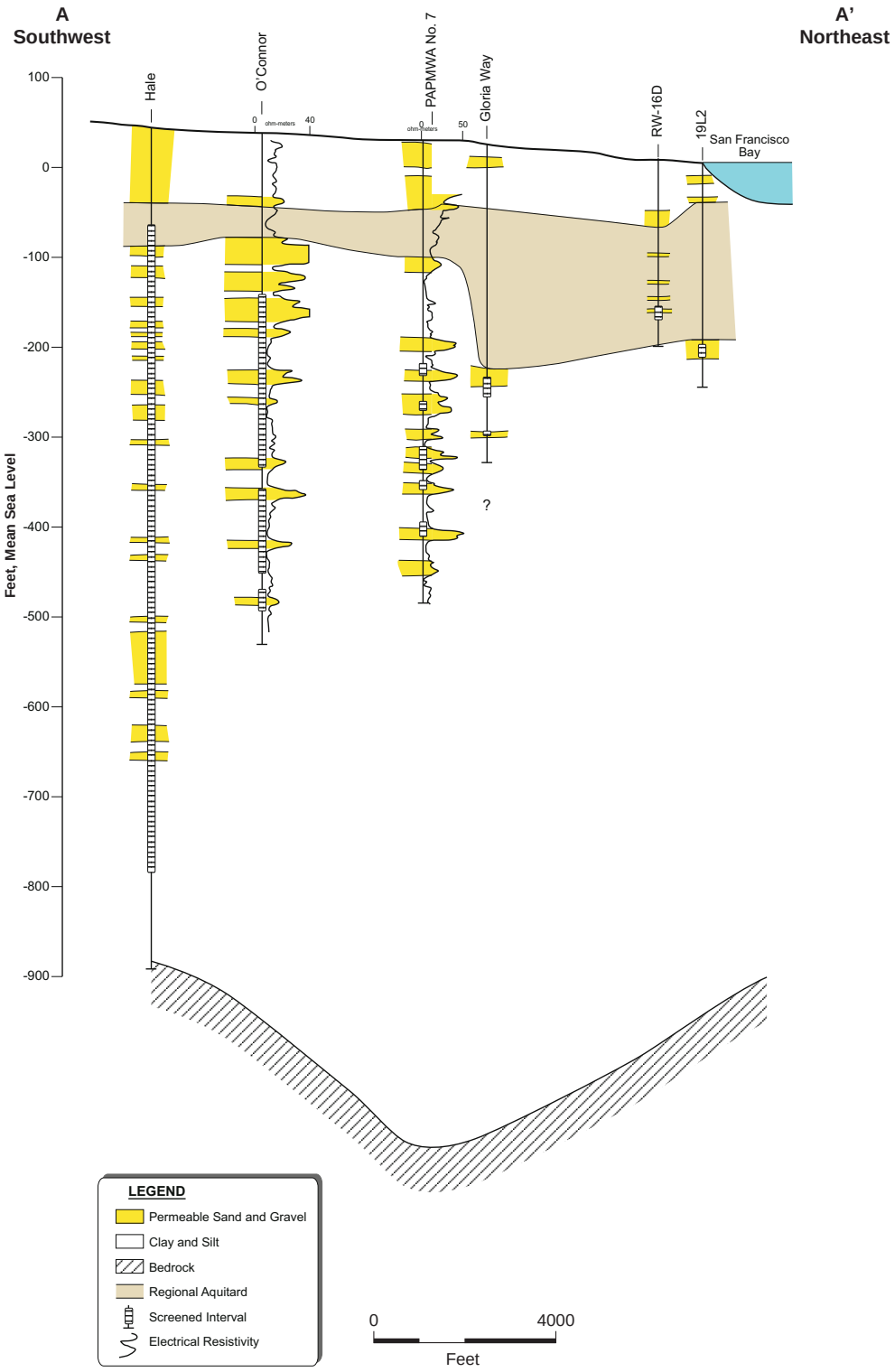
Impact Discussion for HYD-2

There are several municipal production wells and privately-owned domestic and irrigation wells within two miles of the Gloria Way Well. The municipal supply wells extract water from the deeper aquifer while most of the private wells extract groundwater from the shallower aquifer, above the regional aquitard (see **Figure 5**). Since groundwater levels in nearby municipal production wells and private wells could potentially be lowered due to interference with proposed groundwater pumping at the Gloria Way Well, this discussion focuses on two primary issues: (1) whether the proposed project would substantially lower groundwater levels to a degree that would cause reduced yields and/or well damage in active, municipal production wells that are screened at similar depths as the Gloria Way Well; and (2) the effects of the proposed project on the nearby shallow, private wells. There are three shallow private wells and one irrigation well within two miles of the Gloria Way Well. It is not known whether these wells are active or if they are used for potable supply. Given their depth and location, it is possible that they are used for irrigation or other domestic non-potable water supply. However, it is not expected that the identified private wells are used as essential sources of public potable water supply.

Municipal Production Well Interference

Groundwater extraction from a single production well can impact other nearby wells if the area of pumping influence (also known as the cone of depression) generated by the production well lowers local groundwater elevations. While seasonal fluctuation in groundwater elevations is expected, additional drawdown caused by excessive pumping can draw the groundwater elevations in the aquifer to a depth that potentially reduces well yield or damages nearby wells. Typically, drawing groundwater to a level below the top of a well intake screen can cause cavitation,[3] corrosion, and loss of suction. For the purposes of this impact analysis, if the proposed project were to result in the lowering of groundwater elevations in a nearby municipal drinking water supply well below the seasonal low groundwater elevation such that there is a loss in well yield or the top of the well screen is exposed, the impact would be considered significant.

[3] Well pump cavitation is the introduction of air or gases into the mechanical parts of a pump that are trying to move water. The presence of air or other gases in the actual pump chambers or around the water pump impellers leads to overheating of these parts and mechanical damage to the pump moving parts. Cavitation can also cause the pump to have to work longer to satisfy the water demand and thus its electric motor to overheat, also reducing motor life.



SOURCE: Todd Engineers, 2012.

Gloria Way Well Retrofit Project . 211859

Figure 5

Hydrogeologic Cross Section

A simplified numerical groundwater flow model was developed to estimate changes in groundwater elevations (drawdown) as a result of proposed pumping at the Gloria Way Well. Constructed using United States Geologic Survey (USGS) computer code MODFLOW, the model uses input parameters including aquifer hydraulic properties and hydrologic boundary conditions to calculate groundwater elevations in space and time (Todd Engineers, 2012). This model is a simplified single layer model that simulates transient two-dimensional horizontal changes in groundwater elevations in the deep confined aquifer zone perforated by the Gloria Way Well (around 200 to 400 feet below ground surface). The model area comprises about 36 square miles to include East Palo Alto and parts of Palo Alto and Menlo Park. The southern boundary is located about one mile south of El Camino Real in Palo Alto and Menlo Park. Because the deeper confined aquifer extends north of East Palo Alto and under San Francisco Bay, the northern model boundary is located halfway across the southern portion of San Francisco Bay. The western model boundary is located more than two miles away from the Gloria Way Well, and the eastern boundary is located more than three miles away (Todd Engineers, 2012). The Gloria Way Well produces groundwater from deeper aquifer zones and therefore, the model simulated the aquifer as fully confined. Because aquifer transmissivity[4] varies across the model area, transmissivities simulated by the model ranged between 5,200 gallons per day per foot (gpd/ft) to 7,400 gpd/ft. The model assumed a confined storage coefficient of 0.001.

As shown in **Figure 6** the closest municipal production wells are located approximately 0.4 miles west-southwest of the Gloria Way Well and are owned and operated by the Palo Alto Park Mutual Water Company (PAPMWC) in East Palo Alto. The second closest production wells (located approximately one mile south-southwest of the Gloria Way Well) are operated by the O'Connor Tract Cooperative Water Company (O'Connor Tract) in Menlo Park. Other production wells are located over a mile away from the Gloria Way Well site to the west and southwest, including the Veterans Hospital, Menlo College, Saint Patrick's Seminary, and USGS Menlo Park campus wells, as well as emergency supply wells in the City of Palo Alto.

The groundwater model assumed pumping rates at the Gloria Way Well of 100, 200, and 300 gallons per minute (gpm) and estimated drawdowns were mapped and tabulated after 1 and 5 years of pumping. The drawdown modeled using a pumping rate of 300 gpm for 5 years could be considered a worst case condition because it assumes that the proposed pumping at the Gloria Way Well would be continuous. However, continuous pumping at that rate, in reality, would not be the case; the Gloria Way Well pumping would be based on demand and would likely cycle on and off, and be pumped at lower overall rates, allowing time for aquifer recharge and groundwater elevations to at least partially recover.

As shown on **Figure 6,** the model predicted that pumping the Gloria Way Well at 300 gpm continuously for 5 years would lower groundwater elevations by 35 feet at distances of about 500 feet, and by approximately 5 feet about 1.5 miles away. **Table 3-11-2** summarizes the production wells in the vicinity of the Gloria Way Well. This table provides the estimated depth

[4] The rate at which water is transmitted through an aquifer.

SOURCE: Todd Engineers, 2012

Gloria Way Well Retofit Project . 2011859

Figure 6

Predicted 5-Year Drawdown

TABLE 3-11-2
SUMMARY OF DIRECT DRAWDOWN EFFECTS IN SELECT NEIGHBORING WELLS FROM PROPOSED PUMPING AT GLORIA WAY WELL

Well Owner	Approximate Distance and Direction from Gloria Way Well	Approximate Static Depth to Water (feet bgs)	Reported Depth to Water During Pumping (feet bgs)	Approximate Static Water Above Uppermost Screen (feet)	Estimated Drawdown from Gloria Way Well after 5 years of Drawdown (feet)
PAPMWC #3	2,200 feet (0.4 miles) West-Southwest	8	31	186	22
PAPMWC #5	2,200 feet (0.4 miles) West-Southwest	8	46	173	22
PAPMWC #6	2,200 feet (0.4 miles) West-Southwest	8	NA	239	22
PAPMWC #7	2,200 feet (0.4 miles) West-Southwest	8	NA	240	22
O'Connor Tract #1	5,000 feet (0.9 miles) Southwest	23	NA	158	12
O'Connor Tract #2	5,000 feet (0.9 miles) Southwest	23	35	49	12
Veterans Hospital	6,300 feet (1.2 miles) Southwest	26.8	NA	58	10
USGS	9,500 feet (1.8 miles) Southwest	28	49	152	6
St. Patrick's Seminary #1	8,400 feet (1.6 miles) West-Southwest	31	NA	129	7
St. Patrick's Seminary #2	8,400 feet (1.6 miles) West-Southwest	31	NA	129	7
City of Palo Alto – Hale	6,900 (1.3 miles) Southwest	19	190	89	9
City of Palo Alto – Eleanor	7,000 feet (1.3 miles) South	15	NA	84	9
City of Palo Alto - Rinconda	10,000 feet (1.9 miles) South	21	NA	132	7
City of Palo Alto - Peers	14,300 feet (2.7 miles) South	33	142	130	1

NOTE:
Feet bgs – Feet Below ground surface
NA – Not Available

SOURCE: Todd Engineers, 2012.

of water above the top of the well screen in each neighboring production well and shows the amount of drawdown expected from Gloria Way Well pumping under the modeling scenario of continuous 300 gpm pumping over a 5 year period. As shown in the table, pumping groundwater from the Gloria Way Well at a rate of 300 gpm for 5 years would lower groundwater levels by up to 22 feet in the production wells closest to Gloria Way. However, in no case would the proposed pumping at the Gloria Way Well cause groundwater levels to decline to below the top of the uppermost screens of the nearby wells. Therefore, while the Gloria Way Well may slightly lower

local groundwater levels, the decline would not lead to damage or loss of well yield in nearby production wells. Therefore, impacts to nearby municipal production wells would be less than significant.

Private Domestic and Irrigation Wells

The previous discussion focused on deep municipal production wells that draw water from the same deep aquifer as the Gloria Way Well. Three private domestic wells and one private irrigation well have been identified within two miles of the Gloria Way Well. It is not known whether these wells are currently in use but it can be postulated that, if they are, they are used to supplement municipal water supplies at the residence or business. Due to poor quality of shallow groundwater in the study area, it is unlikely that these wells are used as a primary source of potable supplies. However, there is a potential that the proposed project would lower local groundwater elevations such that the active private wells are rendered inoperable either from damage due to cavitation, corrosion, and loss of suction or from loss of yield. This is considered to be a potentially significant impact. However, with implementation of **Mitigation Measure HYD-2 (Private Well Monitoring and Mitigatory Actions)**, the impact would be reduced to a less-than-significant level.

Mitigation:

Mitigation Measure HYD-2: Private Well Monitoring and Mitigatory Actions

Prior to project implementation, the City shall identify all private domestic and irrigation wells within a 3,000 foot radius of the Gloria Way Well site and assess whether the private wells are in current use or abandoned. If a private well is used to supply water to a residence or business at the time the Gloria Way Well is scheduled for start-up, the City shall offer the well owner the opportunity to participate in a voluntary private well monitoring program to monitor long-term changes in groundwater conditions and provide a means by which to mitigate any adverse effects. Participants would be required to provide the City with any available well information and data (e.g., driller's logs, static groundwater levels, pumping records, etc.) and grant limited access to City personnel to collect data from the well. For private wells that do not have driller's logs, the City reserves the right to evaluate the condition of the well (the evaluation could include videoing the interior of the well). As part of the well monitoring program, the City (or a qualified contractor) shall measure baseline groundwater levels in the private wells prior to the start of proposed pumping at Gloria Way Well, and then quarterly for two years. If drawdown resulting in physical damage or loss of yield is observed in any of the participating wells and a California Certified Hydrogeologist can clearly attribute the drawdown to Gloria Way Well pumping, the City shall assume responsibility for the restrictive effect and address the impact by taking one of the following mitigatory actions: (1) compensate the private well owner to have the pump lowered or replaced; (2) compensate the private well owner to have the well deepened or otherwise improved; or (2) deactivate the private well and provide the well owner with replacement municipal supplies at the rate and volume provided by the private well before becoming impacted by Gloria Way Well pumping. The City shall determine the appropriate mitigatory action based on cost and effectiveness.

Impact Discussion for HYD-3, HYD-4, and HYD-5

Site runoff currently occurs as sheet flow that drains to the municipal stormdrain system along Gloria Way and Bay Road. Stormwater runoff volumes and rates generated from unpaved areas can increase when the impervious surface area is increased, and the capability of surface water infiltration is reduced or eliminated. Increases in impervious surfaces can increase peak flows in creeks and the local stormwater drainage system, potentially resulting in increased soil erosion and higher concentrations of nonpoint-source pollution in downstream water bodies, as well as downstream flooding.

The 0.12-acre Gloria Way Well site is currently covered in approximately 3,760 square feet of impervious surfaces. Based on conservative assumptions, implementation of the proposed project would increase the total impervious surface area on the site to approximately 4,290 square feet. This increase in impervious surfaces would result in a negligible increase in stormwater volumes, if at all. The increase in impervious surface area would be substantially less than the thresholds provided in Provision C.3 of the NPDES Municipal Stormwater Permit, which requires that new development and redevelopment projects that involve the creation or replacement of 10,000 square feet or more of impervious surfaces incorporate treatment measures and other appropriate source control and site design features to manage runoff flows. The proposed improvements would not affect site drainage patterns; stormwater runoff would continue to drain overland to the municipal stormdrain system along the bordering roadways. Thus, impacts associated with increased soil erosion and flooding hazards and adverse effects on stormdrain capacity from increases in impervious surface area at the Gloria Way Well site would be less than significant.

Stream Baseflow Depletion

Under certain hydrogeologic conditions, a shallow groundwater aquifer can intersect the surface and contribute to the baseflow to the river or stream. Water discharged from groundwater to surface streams is known as baseflow and is an important source of continual creek flow between rainstorms. Baseflow from groundwater allows perennial creeks to maintain sustainable amounts of low flow, even during the dry season. The magnitude of baseflow that is delivered to a perennial creek depends on the hydrogeologic characteristics of the underlying water-bearing aquifers, the connectivity of the deeper aquifer zones to the shallower water table zones, and the amount of groundwater pumping in all aquifers. Lowering of groundwater levels from by production well pumping can reduce baseflow from a perennial stream, river, or other surface water feature. In the proposed project area, the primary surface water feature in San Francisquito Creek.

It is unlikely that proposed pumping at the Gloria Way Well would result in stream baseflow depletion because the nearest surface water feature, San Francisquito Creek, is located at a substantial distance (about 1 mile) to the south. The estimated drawdown drawdown in the deep aquifer zone resulting from Gloria Way Well pumping is shown on Figure 6. However, the Gloria Way Well is screened at depths greater than 250 feet bgs in the deep aquifer, which is separated from the shallow aquifer by a regional aquitard. The deep aquifer does not intersect the ground surface, and the drawdown in the shallow Bay Mud zone adjacent to the Creek is expected to be

much less than that estimated for the deeper aquifer zone. Therefore, no impact to stream baseflow is anticipated.

Mitigation: None required.

Impact Discussion for HYD-6

The potential water quality issues associated with proposed pumping at the Gloria Way Well are: (1) the potential for the proposed groundwater pumping to draw chemical contaminants from active remediation sites, thereby spreading the contamination and degrading groundwater quality; and (2) inducing landward saline water intrusion from the San Francisco Bay.

Known Contamination Sites

Some contaminants detected in groundwater are the result of human activity rather than naturally-occurring conditions. Sources of this type of groundwater contamination are leaking underground petroleum storage tanks, discharge of heavy metals, and chlorinated solvents in commercial/industrial areas. Some anthropogenic contaminants are carcinogenic and many are hazardous to human health at elevated concentrations. Thus primary drinking water MCLs are the water quality standards applied to these contaminants (Todd Engineers, 2012). A large number of leaking underground storage tank sites and cleanup program sites are located in the City. Several sites have known very high concentration of solvents and heavy metals, including the Romic Chemical and Rhone-Poulenc sites (Todd Engineers, 2012). Generally, the regional aquitard, or confining layer that separates the shallow and deep aquifers, provides a significant degree of protection for deep production wells, such as the Gloria Way Well, including surface releases of contamination. However, abandoned and improperly destroyed wells can provide conduits for the downward migration of contamination.

As described in Section 3.12, Hazards and Hazardous Materials, regulatory agency lists of documented hazardous materials release sites were reviewed to identify sites that could potentially affect soil and groundwater at the Gloria Way Well site. The database search identified 14 known contamination sites within ½-mile of the Gloria Way Well site. Thirteen of these cases are listed as closed, indicating any required remediation or cleanup has been completed to the satisfaction of the responsible agency. The one active case is a soil contamination site located 1,500 feet to the southeast (GeoTracker, 2012; EnviroStor, 2012). There are no groundwater remediation activities associated with the soil contamination site that could be affected by the proposed project. Further, historical water quality sampling has not indicated petroleum or solvent contamination in groundwater pumped from the Gloria Way Well. Therefore, the impact associated with groundwater remediation activities is considered less than significant.

Saline Water Intrusion

Prior to the 1960s, lowered groundwater levels caused by excessive groundwater pumping caused a reversal of the natural groundwater gradient, which is toward the San Francisco Bay, and

induced saline water landward into the aquifer system. Saline water intrusion reportedly extended two to three miles inland to Palo Alto, Menlo Park, and Atherton. The zone of saline water intrusion is generally less than 150 feet bgs. The deep aquifer system, which provides water to the production wells in the subbasin, is protected by confining layers near the San Francisco Bay. However, some saline contamination has previously been detected in the deep aquifer due to excessive pumping coupled with improper well construction and groundwater well abandonment procedures (Todd Engineers, 2012).

Chloride concentrations in Palo Alto's former Hale Well peaked at 215 mg/L in 1958. Palo Alto's Rinconada Well had a chloride concentration as high as 250 mg/L in 1972. (Todd Engineers, 2012). The Santa Clara County Water District (SCVWD) is actively monitoring for saline water intrusion in the greater Santa Clara Valley Groundwater Basin at a series of groundwater monitoring wells located in Santa Clara County. Monitoring results in Palo Alto has not indicated an increase in saline water intrusion in the shallow or deep aquifers. Currently, there is no program to monitor groundwater for saline intrusion in San Mateo County (Todd Engineers, 2012).

Historical observations in the deep and shallow wells underlying East Palo Alto and Menlo Park suggest that there is a potential for saline water intrusion to occur in the San Francisquito Creek Groundwater Subbasin if total pumping by municipal water purveyors was to increase substantially. This is further discussed in Chapter 5, Cumulative Impacts. However, based on the drawdown analysis described above under Impact Discussion for HYD-2, there is no indication that the groundwater pumping proposed under the project would, in itself, reverse the regional natural groundwater flow and induce saline water intrusion. Therefore, this impact is considered less than significant.

Mitigation: None required.

Impact Discussion for HYD-7, HYD-8, and HYD-9

The Gloria Way Well site is not located within a designated 100-year flood hazard zone and is not located within a dam inundation zone. Therefore, the significance criteria related to the placement of housing or structures within a 100-year flood hazard zone, and flooding as a result of the failure of a levee or a dam, are not applicable to the proposed project. No impact would result.

Mitigation: None required.

Impact Discussion for HYD-10

The project site is located at a topographic elevation of 20 to 21 feet above msl and is approximately one mile from the shoreline of San Francisco Bay. Based on the distance from the San Francisco Bay and site elevations, tsunami hazards are remote. The project site is not located

near an enclosed or semi-enclosed water body. Therefore, there are no hazards associated with seiches at the project site. The relatively flat topography of the project area would not be susceptible to mudflows. Therefore, the significance criterion related to inundation by seiche, tsunami, or mudflow is not applicable to the proposed project

Mitigation: None required.

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3.12 Hazards and Hazardous Materials

This section presents an evaluation of the potential for implementation of the proposed project to result in hazards and hazardous materials impacts that could adversely affect human health and/or the environment.

The term "hazardous materials" is used in this document to refer to both hazardous substances and hazardous wastes. Under federal and state laws, materials, including wastes, may be considered hazardous if they are specifically listed by statute as such or if they are poisonous (toxicity), can be ignited by open flame (ignitability), corrode other materials (corrosivity), or react violently, explode, or generate vapors when mixed with water (reactivity). A hazardous material is defined in the California Health and Safety Code (California Health and Safety Code, 2010) as:

> Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment. (Section 25501[o])

Setting

Land Use and Development History

Land uses and land use activities involving the use of hazardous materials or chemicals have the potential to result in leaks or inadvertent spills of these substances into the environment, resulting in contamination of soil and/or groundwater. In addition, older buildings and structures often include hazardous construction materials, such as asbestos or lead-based paint, that can be released to the environment during demolition if not appropriately handled and disposed of.

Based on what is known about historical land uses in the immediate project vicinity, the Gloria Way Well site is likely situated on land previously cultivated for agricultural purposes during the early 1900's (ENGEO, 2009). Although specific information regarding historical agricultural practices in the immediate project vicinity is not available, the use of chemical fertilizers and pesticides was common practice at that time. Beginning in the 1950's, commercial land uses were established near University Avenue and Bay Road, and industrial uses including steel fabrication, auto services, chemical processing, and a cement batch plant, were established generally east of Illinois Street (approximately 0.5 mile east of the Gloria Way Well site) (ENGEO, 2009). Former agricultural uses are sometimes linked to residual soil contamination associated with the potential historic use of pesticides, fertilizers, and other agricultural chemicals. Industrial and commercial land uses involving aboveground or underground storage tanks containing fuel or oil are commonly linked to releases of petroleum hydrocarbons to soil and groundwater.

The 0.12-acre Gloria Way Well site is currently developed with water supply facilities and infrastructure and is bordered by Gloria Way and Bay Road to the east and south, respectively. Existing land uses in the immediate vicinity are comprised of single-family residential on adjoining properties to the north and west, and a combination of multi-family residential and neighborhood commercial to the east and south. The Gloria Way Well site is located within ¼-mile of several schools, including Creative Montessori Learning, Magnolia Head Start of East Palo Alto, Cesar Chavez Elementary School, and Green Oaks Academy. The nearest airport to the proposed project is the Palo Alto Airport in Santa Clara County, which is approximately two miles to the southeast. There are no private airstrips in the vicinity of the project site. The California Department of Forestry and Fire Prevention (CAL FIRE) maps fire hazard severity areas throughout the state. The Gloria Way Well site is not located within a High Fire Hazard Severity Zone (CALFIRE, 2007). These land uses are not typically associated with any specific soil or groundwater contamination issues.

As stated in Chapter 2, Project Description, the Gloria Way Well and associated on-site infrastructure were constructed in 1980. Therefore, it is unlikely that the existing facilities and infrastructure on the site that would be removed as part of the project contain hazardous construction materials. The existing electrical transformer that would be retained under the proposed project was installed in 1980, at the same time as the Gloria Way Well was developed. As discussed in further detail below under Regulatory Framework, up until 1978, the ballasts in electrical transformers were cooled using oil contained polychlorinated biphenols (PCBs), a toxic chemical. The existing transformer does not contain PCBs and is cooled using non-toxic oil.

Regulatory File Review

Regulatory agency lists of documented hazardous materials release sites were reviewed to identify sites that could potentially affect soil and groundwater at the Gloria Way Well site. Regulatory agency list searches were performed in December 2012 using the California Department of Toxic Substances Control (DTSC) EnviroStor database and the California State Water Resources Control Board (SWRCB) GeoTracker database. The DTSC EnviroStor database provides information on investigation, cleanup, permitting and/or corrective actions that are planned, being conducted, or have been completed under DTSC's oversight, as well as Leaking Underground Storage Tank (LUST) sites that are under the jurisdiction of San Mateo County Environmental Health Services Division (SMCEHSD) Local Oversight Program (LOP). It includes the following lists: Federal Superfund; State Response; Cortese; Voluntary Cleanup; School Cleanup; Military Evaluation; Hazardous Waste Permit; and Hazardous Waste Corrective Action. The SWRCB GeoTracker database includes the following lists: Leaking Underground Storage Tank (LUST) Cleanup Sites; Spills, Leaks, Investigation and Cleanup (SLIC) Sites; and Permitted Underground Storage Tank (UST) Facilities. Both of these databases include information about environmental cases under the jurisdiction of SMCEHSD.

The Gloria Way Well Site was not listed in any of the databases. The database search identified 14 sites associated with hazardous materials releases[1] within roughly ½-mile of the Gloria Way Well site. Thirteen of these cases were listed as closed, indicating any required remediation or cleanup has been completed to the satisfaction of the responsible agency. The one active case is a soil contamination site located 1,500 to the southeast. Since soil does not typically migrate very far, documented soil contamination at sites that do not border the project area is unlikely to affect soils in the project area (GeoTracker, 2012; EnviroStor, 2012). As a result, these hazardous materials release sites were determined to have a very low potential to affect soil and groundwater at the Gloria Way Well.

Inadvertent accidental spills or leaks of hazardous materials to the environment can result in soil and/or groundwater contamination. Hazardous materials may also be present in building materials and released during building demolition activities. If improperly handled, hazardous materials and wastes can cause public health hazards when released to the soil, groundwater, or air. The four basic exposure pathways through which an individual can be exposed to a chemical agent include: inhalation, ingestion, bodily contact, and injection. Exposure can come as a result of an accidental release during transportation, storage, or handling of hazardous materials. Disturbance of subsurface soil during construction can also lead to exposure of workers or the public from stockpiling, handling, or transportation of soils that have been contaminated by hazardous materials from previous spills or leaks.

Regulatory Framework

Hazardous Materials Management and Emergency Planning

State and federal laws require businesses that handle hazardous materials to ensure that the hazardous materials are properly handled, used, stored, and disposed of, and in the event that such materials are accidentally released, to prevent or reduce injury to health and the environment. California's Hazardous Materials Release Response Plans and Inventory Law, sometimes called the "Business Plan Act," aims to minimize the potential for accidents involving hazardous materials and to facilitate an appropriate response to hazardous materials emergencies. The law requires businesses that use hazardous materials to provide inventories of those materials to designated emergency response agencies, to illustrate on a diagram where the materials are stored, to prepare an emergency response plan, and to train employees to use the materials safely. This law is implemented locally by SMCEHSD, which also enforce certain fire code regulations pertaining to hazardous materials storage.

[1] Unless listed in association with a documented release, it is assumed that sites permitted to use, store, generate, or dispose of hazardous materials handle such materials in accordance with applicable laws and would not affect soil or groundwater at the Gloria Way Well site.

Hazardous Waste Handling

The California Environmental Protection Agency (Cal EPA), Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. The Cal EPA has authorized DTSC to enforce hazardous waste laws and regulations in California. State requirements assign "cradle-to-grave" responsibility for hazardous waste to hazardous waste generators. Anyone who creates a hazardous waste is considered a hazardous waste generator. Generators must ensure that their waste is disposed of properly, and legal requirements dictate the disposal requirements for many waste streams (e.g., banning many types of hazardous wastes from landfills). All hazardous waste generators must certify that, at a minimum, they make a good faith effort to minimize their waste and select the best waste management method available. Hazardous waste laws and regulations are enforced locally by the East Palo Alto Fire Department and SMCEHSD.

Worker Safety

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the work place. The California Division of Occupational Safety and Health (Cal OSHA) and the federal Occupational Safety and Health Administration are the agencies responsible for assuring worker safety in the workplace. Cal OSHA assumes primary responsibility for developing and enforcing standards for safe workplaces and work practices. At known contamination sites, a Site Safety Plan must be prepared to protect workers. The Site Safety Plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site (National Institute for Occupational Safety and Health, 1985).

Hazardous Building Components

Existing structural building components may contain hazardous materials such as asbestos, polychlorinated biphenyls, lead, and mercury. These materials are subject to various federal, state and local regulations.

Asbestos

Asbestos was commonly used until the 1970s as a component of numerous building materials, including use in insulation materials, shingles and siding, roofing felt, floor tiles, the mastic used to affix floor tiles to the floor, and acoustical ceiling material. Asbestos was also used in pipe gaskets, valve packing, and automotive brakes and clutches. Today, asbestos continues to be used in roofing mastic. Asbestos is a known carcinogen and may present a public health hazard if it is present and exposed in the friable (easily crumbled) form. Long-term, chronic inhalation of asbestos can cause lung diseases such as asbestosis, mesothelioma, and lung cancer.

Asbestos is regulated both as a hazardous air pollutant and as a potential worker safety hazard. Bay Area Air Quality Management District (BAAQMD) and Cal OSHA regulations restrict asbestos emissions from demolition and renovation activities, and specify safe work practices to minimize the potential release of asbestos fibers. These regulations prohibit emissions of asbestos

from asbestos-related manufacturing, demolition, or construction activities; require medical examinations and monitoring of employees engaged in activities that could disturb asbestos; specify precautions and safe work practices that must be followed to minimize the potential to release asbestos fibers; and require notice be given to federal and local government agencies prior to beginning renovation or demolition that could disturb asbestos. California requires the licensing of contractors who conduct asbestos abatement activities. Given the age of the existing water supply facilities and infrastructure at the Gloria Way Well site, it is unlikely that they contain asbestos materials.

Polychlorinated Biphenyls (PCBs)

DTSC has classified PCBs as a hazardous waste when concentrations exceed 5 parts per million (ppm) in liquids or when a standard extract of a non-liquid exceeds 5 ppm. Electrical transformers and fluorescent light ballasts may contain PCBs, and if so, they are regulated as hazardous waste and must be transported and disposed of as hazardous waste. Ballasts manufactured since 1978, in general, do not contain PCBs and are required to have a label stating that PCBs are not present. The existing transformer on the project site was installed in 1980 at the same time the Gloria Way Well was developed, is cooled with a non-toxic oil, and does not contain PCBs.

Lead

Cal OSHA standards establish a maximum safe exposure level for types of construction work that may result in exposure to lead exposure, including demolition of structures with materials containing lead; removal or encapsulation of materials containing lead; and new construction, alteration, repair, and renovation of structures with materials containing lead. Inspection, testing, and removal of lead-containing building materials are to be performed by state-certified consultants and contractors who are required to comply with applicable health and safety and hazardous materials regulations. The U.S. Department of Housing and Urban Development has published guidelines for the evaluation and control of lead-based paint hazards in housing. Typically, building materials with lead-based paint are not considered hazardous waste unless the paint is chemically or physically removed from the building debris. Considering the age of the carports at the property, lead-based materials may be present in materials intended for removal.

Hazardous Materials Transportation

The U.S. Department of Transportation (DOT) has developed regulations pertaining to the transport of hazardous materials and hazardous wastes by all modes of transportation. The U.S. Postal Service (USPS) has developed additional regulations for the transport of hazardous materials by mail. DOT regulations specify packaging requirements for different types of materials. EPA has also promulgated regulations for the transport of hazardous wastes. These more stringent requirements include tracking shipments with manifests to ensure that wastes are delivered to their intended destinations. In California, the California Highway Patrol, DOT, and DTSC play key roles in enforcing hazardous materials transportation requirements.

Local Regulations

Certified Unified Program Agency

The SMCEHSD is the Certified Unified Program Agency (CUPA) that coordinates and enforces numerous local, state, and federal hazardous materials management and environmental protection programs in San Mateo County. The SMCEHSD administers the following programs:

- Hazardous Materials Business Program
- Hazardous Waste Generator Program
- Underground Storage Tank Program
- California Accidental Release Program
- Tiered Permitting Program
- Aboveground Storage Tank Program

Hazardous Materials Business Program

In accordance with the Hazardous Materials Business Program, businesses that use, handle, or store hazardous materials in excess of threshold quantities are required to submit a Hazardous Materials Business Plan (HMBP) in accordance with community right-to-know laws. Threshold quantities are 500 pounds for solids, 55 gallons for liquids, and 200 cubic feet for compressed gases. Since these thresholds would be exceeded at the Gloria Way Well site, the City of East Palo Alto will be required to prepare a HMBP. In San Mateo County, the HMBP must include the following:

- Summary of business activities
- Owner/operator information including emergency contacts
- An inventory of the type and quantity of hazardous materials used and/or stored on-site
- Site map
- Emergency response procedures
- Employee training plan

The HMBP must be filed with and administered by the SMCEHSD, which ensures review by and distribution to other potentially affected agencies. The plan must be reviewed every three years to determine if any revision is needed, and must be updated within 30 days when there is a 100 percent or more increase in the quantity of previously disclosed hazardous materials, or when a facility begins storing a new hazardous material at or above threshold quantities.

Environmental Checklist and Discussion of Impacts

	Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
HAZARDS AND HAZARDOUS MATERIALS — Would the project:				
HZ-1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
HZ-2 Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
HZ-3 Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
HZ-4 Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
HZ-5 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
HZ-6 For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
HZ-7 Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
HZ-8 Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Impact Discussion for HZ-1

Hazardous chemicals that would be used for water treatment chemicals at the Gloria Way Well site are chlorine, ammonia, sodium hypochlorite, and, if needed for pH adjustment, sodium hydroxide. These chemicals would be stored with secondary containment inside the electrical/chemical building. Approximately 500 gallons of hazardous chemicals would be used at the Gloria Way Well site each month for disinfection and water conditioning.

The storage and handling of hazardous materials, mainly sodium hypochlorite and diesel fuel, used for well and treatment plant operations is subject to laws and regulations overseen by SCCEHS. Hazardous materials regulations require preparation of a Hazardous Materials Business Plan and site inspections by the regulatory agency to ensure compliance with regulations for

chemical use, storage, and disposal. Approximately 3,000 gallons of wastewater containing manganese sludge generated by the water treatment system would be disposed to the sanitary sewer each week, subject to the terms of the wastewater discharge limits of the East Palo Alto Sanitation District.

The chemical storage and handling systems would be designed and constructed in accordance with specific requirements for the safe storage and handling of hazardous materials set forth in the Uniform Fire Code, Article 80. These requirements reduce the potential for a release of hazardous materials and for mixing of incompatible materials that could pose a public health hazard or water quality risk. The following specific design features would reduce the potential for a release of hazardous materials that could affect public health or the environment:

- Separation of incompatible materials with a noncombustible partition.
- Spill control in all storage, handling, and dispensing areas.
- Separate secondary containment for each chemical storage system. The secondary containment would hold the entire contents of the tank, plus the volume of water needed to supply the fire suppression system for a period of 20 minutes in the event of a catastrophic spill.

With compliance with existing state and federal regulations regarding hazardous materials storage and management, the potential for environmental impacts due to improper handling or accidental release of hazardous materials associated with project operations is considered less than significant, and no mitigation is required.

Mitigation: None required.

Impact Discussion for HZ-2

The regulatory agency list review of known hazardous materials sites did not identify the Gloria Way Well site on any regulatory agency lists. Several LUST sites were identified within ½-mile of the project site, however, these sites were determined to have a low potential to impact soil and groundwater at the project site because the cases were either closed or were soil contamination sites located 1,500 feet away. Although the potential for encountering hazardous materials is low, the possibility exists for unknown contamination to be encountered during construction, a potentially significant impact. Implementation of **Mitigation Measure HZ-1** (**Hazardous Materials Handling and Disposal**), would reduce this impact to a less-than-significant level by requiring appropriate handling and disposal of any materials encountered during excavation that are suspected of being contaminated by hazardous materials.

In addition, construction activities would require the use of certain potentially hazardous materials such as fuels, oils, solvents, lead solder, and glues. These materials would generally be used on excavation and drilling equipment, generators, and other construction equipment and would be stored within appropriate storage containers. Storage and use of hazardous materials

at construction sites and staging areas could result in the accidental release of small quantities of hazardous materials which could degrade soil and groundwater quality, and/or surface water quality in nearby creeks or downstream water bodies. The potential for an accidental hazardous materials release during construction to affect the public or the environment represents a potentially significant impact. However, with implementation of **Mitigation Measure HY-1** (**Construction Best Management Practices**), described in Section 3.11, Water Hydrology and Water Quality, the potential impact of an accidental hazardous materials release during construction to affect the public or the environment would be reduced to less than significant.

Mitigation:

Mitigation Measure HZ-1: Hazardous Materials Handling and Disposal.

Contractor specifications shall include procedures for handling and disposal of suspected contaminated soils. In the event that suspected contaminated soils are observed during construction, the contractor shall segregate these materials from other soils and notify San Mateo County Environmental Health Services Division (SMCEHSD). The suspected soils shall be placed on visqueen or equivalent impervious material and covered for protection. The contractor shall then coordinate with the SMCEHSD for the safe handling, sampling, and disposal of the suspected materials in accordance with state regulations.

Mitigation Measure HY-1: Construction Best Management Practices.

Refer to Section 3.11, Water Hydrology and Water Quality, for description.

Impact Discussion for HZ-3

The Gloria Way Well site is located within ¼-mile of several schools, including Creative Montessori Learning, Magnolia Head Start of East Palo Alto, Cesar Chavez Elementary School, and Green Oaks Academy. However, the use of small quantities of hazardous materials (such as fuels and lubricants) during construction and the use of sodium hypochlorite (bleach) for water treatment would not cause hazardous emissions or exposures at nearby schools. Thus, potential impacts related to hazardous emission or the handling of hazardous materials or acutely hazardous materials within ¼-mile of a school are considered less than significant, and no mitigation is necessary.

Mitigation: None required.

Impact Discussion for HZ-4

The regulatory agency list review of known hazardous materials sites did not identify the Gloria Way Well site on any of the regulatory agency lists. Therefore, there would be no impact relative to hazardous materials sites.

Mitigation: None required.

Impact Discussion for HZ-5 and HZ-6

The nearest airport to the proposed project is the Palo Alto Airport in Santa Clara County, which is approximately two miles to the southeast. There are no private airstrips in the vicinity of the project site. Because the project is not located in close proximity to a public airport or private airstrip and would not involve the construction of aboveground structures that could interfere with air traffic, there would be no impact related to safety hazards in the vicinity of an airport or private airstrip.

Mitigation: None required.

Impact Discussion for HZ-7

During construction, traffic along Gloria Way would be restricted to one lane in vicinity of trenching during installation of the 8-inch-diameter pipeline for up to one week. In addition, the Gloria Way road right-of-way immediately in front of the site could be used for construction activities, resulting in intermittent lane closures during working hours for the full 12 months of construction. With the exception of up to 1 week when the right hand lane on Bay Road would be closed for installation of the other 8-inch-diameter pipeline, Bay Road would remain open during construction.

Project construction would have temporary effects on traffic flow along Gloria Way and Bay Road, particularly during pipeline installation within or across roadways. Temporary reductions in travel lanes and road capacity to accommodate the construction zone could result in delays for emergency vehicles in the vicinity of the Gloria Way Well site. However, with implementation of a traffic control plan as described in **Mitigation Measure TR-1 (Traffic Control Plan)**, which would require that the construction contractor(s) provide advanced notification to emergency service providers of all work within road right-of-ways and maintain emergency vehicle access throughout construction, this impact would be reduced to a less-than-significant level.

> **Mitigation Measure TR-1: Traffic Control Plan.**
>
> Refer to Comment to TR-1 in Section 3.4, Traffic and Transportation, for description.

Impact Discussion for HZ-8

The use of construction equipment and temporary onsite storage of fuel and lubricants could pose a wildland fire risk. The time of the greatest fire danger is during the clearing phase, when people and machines are working among vegetative fuels that can be highly flammable; if piled onsite, the cleared vegetative materials could also become a fire fuel. Potential sources of ignition

include equipment with internal combustion engines, gasoline-powered tools, and equipment or tools that produce a spark, fire, or flame. Such sources include sparks from blades or other metal parts scraping against rock, overheated brakes on wheeled equipment, friction from worn or unaligned belts and drive chains, and burned-out bearings or bushings. Smoking by onsite construction personnel is also a source of ignition during construction.

The California Department of Forestry and Fire Prevention (CAL FIRE) maps fire hazard severity areas throughout the state. The Gloria Way Well site is not located within a High Fire Hazard Severity Zone (CALFIRE, 2007). As a result, potential impacts associated with wildland fire hazards would be less than significant, and no mitigation is necessary.

Mitigation: None required.

References – Hazardous and Hazardous Materials

CAL FIRE, Very High Fire Hazard Severity Zones for San Mateo County [Map]. Fire and Resource Assessment Program (FRAP), California Department of Forestry and Fire Protection. November 7, 2007.

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3.13 Utilities and Service Systems

This section describes existing utilities (including water supply, wastewater, and storm drainage) and solid waste disposal services that serve the project site and surroundings. This section also provides a summary of the regulatory setting and evaluates potential environmental impacts of the project on existing utilities and solid waste disposal services provided in the project site and surroundings.

Setting

Water Supply

The City of East Palo Alto purchases water from the San Francisco Public Utilities Commission (SFPUC) Hetch Hetchy Aqueduct, which traverses through northwest portion of the City. The water service area is approximately 2.5 square miles and includes most of East Palo Alto, portions of Menlo Park (east of U.S. 101). There are two private mutual water companies (Palo Alto Park Mutual Water Company and the O'Connor Tract Water Cooperative) that service small sections of the City outsides the municipal water system.

According to the City of East Palo Alto's *2010 Urban Water Management Plan (UWMP)*, the City anticipates a shortfall in water supply for its future use over the next 25 years. As indicated in the UWMP, the City's per capita water use is currently 79 gallons per day and this usage rate is expected to remain constant through 2015. As of 2010, the City delivered approximately 1,906 acre-feet1 of water to 4,183 customers, and the City expects to deliver 2,571 acre-feet of water to 5,088 customers by 2020; a 35 percent increase water demand, respectively. The City has development measures to provide adequate water supply during drought times of shortage; however, to accommodate long-term demand during dry-season and drought periods, the City is focusing its efforts on new groundwater sources to increase water supply to accommodate existing and future demand (City of East Palo Alto, 2010).

In proximity to the project site, residential buildings surrounding the site are connected to the City's water system; however, the project site, which is currently an inoperative well, is not connected to the existing system. Domestic water and fire service for the site and surrounding area is provided by a 12-inch diameter water main in Bay Road.

Sanitary Sewer Services/Wastewater Treatment

Wastewater treatment services are provided by the East Palo Alto Sanitary District (EPASD) and the West Bay Sanitary District (WBSD). The EPASD services the eastern (and a much larger) portion of East Palo Alto; whereas the WBSD services the remaining areas throughout the City. Both districts transport wastewater out of the City boundaries. The EPASD transports its wastewater to the City of Palo Alto's Regional Water Quality Control Plant (RWQCP), and the

1 One acre-feet equals the amount of water required to cover one acre one foot deep.

WBSD delivers wastewater to the South Bayside System Authority Regional Treatment Plant (SBSARTP), located in San Carlos. The City of East Palo Alto currently does not use recycled water and there is no infrastructure to transfer recycled wastewater back into the City. However, the City is currently planning to install satellite wastewater treatment plants to draw wastewater from the City's sewer lines before discharge outside the city boundaries and reuse treated wastewater for irrigation for parks and facility landscaping. The City estimates that installation of such satellite facilities would create up to 50,000 gallons per day of usable water (City of East Palo Alto, 2010).

The project site is located in the central area of East Palo Alto and served by the EPASD. The sewer system includes approximately 30 to 35 miles of gravity sewer mains, with varying pipe sizes (from six-inch diameter to 24-inch diameter pipes). The EPASD has no pumping stations and serves over 22,000 local residents. The EPASD collects an average of 3.06 million gallons per day (mgd) of wastewater, which equates to about eight percent of treatment capacity allotments at the RWQCP (which has a dry-weather capacity of 39 mgd and wet-weather capacity of 80 mgd) (City of East Palo Alto, 2010).

Stormwater Drainage

The City of East Palo Alto owns, operates, and maintains the municipal storm drainage system within the City boundaries. Stormwater within the City drains into two major drainage systems, the Runnymede Storm Drain System and the O'Connor Storm Drain System. The project site would be located within the Runnymede Storm Drain System. Stormwater for this storm drain system is carried through a 72-inch concrete pipe and flows into the San Francisco Bay. On average, stormwater discharge for the drainage system is about 229 cubic feet per second (cfs) for a 10-year storm, 277 cfs for a 25-year storm, and 342 cfs for a 100-year storm (City of East Palo Alto, 2012).EPASD

Solid Waste

Solid waste collection in the City of East Palo Alto is provided by Recology San Mateo County (Recology). Other materials collected by Recology include recyclable materials and organic waste. All collected materials from the City are transported to the Shoreway Environmental Transfer Center in San Carlos. The transfer station receives approximately 772 tons per day (tons/day) and has a permitted capacity of 3,000 tons/day. The City of East Palo contributes approximately 40 tons/day to the transfer station, of which 13 tons/day are diverted from the landfill. Solid waste that is not diverted from the landfill is transported to Ox Mountain Landfill, located near Half Moon Bay. As of 2008, the landfill received 643,870 tons of solid waste, of which the City contributed approximately 2.3 percent (City of East Palo Alto, 2012). Ox Mountain Landfill, also known as Corinda los Trancos Landfill, is expected to reach its capacity by 2018. The landfill can accept up to 3,598 tons of waste per day (CalRecycle, 2012a).

Regulatory Framework

California Public Utilities Commission

The California Constitution vests the California Public Utilities Commission (CPUC) with the sole authority to regulate privately owned and investor-owned public utilities, such as PG&E. This exclusive power extends to all aspects of utility regulation, including facility location, design, construction, maintenance, and operation. CPUC provisions require regulated utilities to work closely with local governments and give due consideration to their concerns. The CPUC does not regulate utilities that are publicly-owned by municipalities such as the City of East Palo Alto.

California Integrated Waste Management Act of 1989

The California Integrated Waste Management Board (CIWMB) was created to oversee, manage, and track waste generated in California. As of January 2010, the CIWMB changed its name to the Department of Resources, Recycling, and Recovery (CalRecycle). The authority and responsibilities of the CIWMB (now CalRecycle) were shaped by Assembly Bill 939 and Senate Bill 1322, which were signed into law as the California Integrated Waste Management Act of 1989 (Public Resources Code [PRC], Division 30). The California Integrated Waste Management Act, as modified by subsequent legislation, required all California cities and counties to implement programs to reduce, recycle, and compost at least 50 percent of wastes by the year 2000 (PRC Section 41780). A jurisdiction's diversion rate is the percentage of total waste that it diverts from disposal through reduction, reuse, and recycling programs. The state determines compliance with this mandate to divert 50 percent of generated waste (which includes both disposed and diverted waste) through a complex formula. This formula requires cities and counties to conduct empirical studies to establish a "base-year" waste generation rate against which future diversion is measured. The actual determination of the diversion rate in subsequent years is arrived at through deduction instead of direct measurement. Rather than counting the amount of material recycled and composted, the city or county tracks the amount of material disposed of at landfills and then subtracts that amount from the base-year amount; the difference is assumed to be diverted (PRC Section 41780.2).

Utility Notification Requirements

Title 8, Section 1541 of the California Code of Regulations requires excavators to determine the approximate locations of subsurface installations such as sewer, telephone, fuel, electricity, and water lines (or any other subsurface installations that may reasonably be encountered during excavation work) prior to opening an excavation.

California law (Government Code Section 4216 et seq.) requires owners and operators of underground utilities to become members of and participate in a regional notification center, such as Underground Service Alert–Northern California (USA North). USA North receives reports of planned excavations from public and private excavators, and transmits the information to all participating members that may have underground facilities at the location of an excavation. USA members mark or stake their facilities, provide information, or give clearance to dig.

City of East Palo Alto Recycling and Waste Diversion Ordinance

The City of East Palo Alto's recycling and waste diversion ordinance establishes requirements to divert construction and demolition debris away from landfills. The ordinance requires that every structure planned for demolition be made available for deconstruction, salvage, and recovery prior to demolition and requires that sufficient time be provided for this purpose. The property owner and construction contractors are responsible for recovering the maximum feasible amount of salvageable designated recyclable and reusable materials prior to demolition. Recovered and salvaged materials may be given away or sold on the premises, or may be removed to reuse warehouse facilities for storage or sales. As part of the demolition permit process, project applicants are required to submit a Recycling and Waste Reduction Form to the City of East Palo Alto Public Works Department providing an estimate of the tonnage of construction or demolition debris to be generated on the site, and tonnage of construction and demolition debris that will be diverted from landfills. Although the ordinance does not specify diversion goals for public utility projects, the Director of Public Works may elect to impose such goals as a condition of the demolition permit.

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
UTILITIES AND SERVICE SYSTEMS — Would the project:					
UT-1	Conflict with wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
UT-2	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
UT-3	Require or result in the construction of new storm water drainage facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
UT-4	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
UT-5	Result in a determination by the wastewater treatment provider that would serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
UT-6	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
UT-7	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Impact Discussion for UT-1

The proposed project includes improvements to the existing Gloria Way Well facilities and to provide potable water to the City of East Palo Alto. Implementation of the proposed project would not involve the construction of onsite restroom facilities. However, the treatment of groundwater for potable use would generate manganese concentrate (i.e., treatment sludge) that would be discharged to the sanitary sewer system. Up to 3,000 gallons of sludge from manganese removal would be discharged to the sanitary sewer system each week. Manganese wellhead treatment is a common treatment process for groundwater supplies; the treatment sludge, consisting of manganese oxide and, to a lesser extent, some ferric oxide, is commonly discharged to sanitary sewer systems. The sludge produced from the treatment process would not conflict with wastewater treatment requirements established by the Regional Water Quality Control Board (RWQCB). Therefore, no impact would result.

Mitigation: None required.

Impact Discussion for UT-2

The proposed project would not result in, or require the construction of new wastewater treatment facilities or expansion of existing facilities. The project includes the construction of a new water treatment facility for manganese removal at the existing Gloria Way Well site. The water treatment facility is a key component of the proposed project, and the potential impacts associated with this facility are evaluated throughout this Joint EA/MND. Thus, this criterion is addressed throughout this document and is not applicable in this section.

Mitigation: None required.

Impact Discussion for UT-3

The proposed improvements to the existing Gloria Way Well site would not require the construction of new storm drainage facilities or the expansion of existing storm drainage facilities. Further, implementation of the proposed project would not result in increased discharges to the local storm drainage system. Therefore, no impact would result.

Mitigation: None required.

Impact Discussion for UT-4

The proposed project would not construct new housing, nor would it increase the number of permanent workers in the area. No changes in water demand or water distribution would result.

Thus, the proposed project would not require additional water supply or require new or expanded water supply resources or entitlements. Therefore, no impacts related to insufficient water supplies would result.

Mitigation: None required.

Impact Discussion for UT-5

Implementation of the proposed project would not involve the construction of restroom facilities, but the treatment sludge from manganese removal would be discharged to the local sanitary sewer system. Approximately 3,000 gallons of treatment sludge would be discharged to the sanitary sewer each week. The increase in wastewater flows to the sanitary sewer system would result in a potentially significant impact if the EPASD had limited conveyance capacity to serve the increased flow, or if the City of Palo Alto's RWQCP had insufficient treatment capacity to serve the project.

When distributed over the week, the proposed project would increase wastewater flows in the local sanitary sewer system by less than ½ gallon per minute, which represents a 0.001 percent increase in wastewater flows to the City of Palo Alto's RWQCP each day. This negligible increase in wastewater flows would not pose conveyance capacity issues for the local sanitary sewer system, not treatment capacity issues for the regional treatment plant. Therefore, the impact would be considered less than significant.

Mitigation: None required.

Impact Discussion for UT-6 and UT-7

Sources of solid waste from demolition and construction activities would include excavated concrete, asphalt, rock, soil, and miscellaneous construction debris. Clean soil that is excavated during construction would be stockpiled and used as backfill. Although the specific quantity of construction and demolition debris that would be generated would be dependent on the final design of the individual facilities and the quality of the excavated soils and materials, project construction activities are anticipated to generate approximately 200 cubic yards of excess spoils.

As stated above, the quantities of construction and demolition debris requiring disposal at landfills cannot be specifically calculated at this time. Assuming the worst case scenario, under which the full 200 cubic yards of excess spoils would be disposed of at landfills, project construction would result in a daily disposal rate of 1 ton, or ¾ cubic yard.[2] This represents approximately 2.5 percent of the City of East Palo Alto's daily contribution to the Shoreway

[2] Construction and demolition debris requiring offsite disposal would be disposed of Mondays through Fridays over the 12-month construction period.

Environmental Transfer Center in San Carlos, approximately 0.03 percent of the transfer station's permitted daily capacity, and 0.03 percent of the Ox Mountain Landfill's daily acceptance capacity. Although any waste disposed of at the landfill would decrease the landfill's long-term capacity, due to the minimal volume of waste that would be generated by construction and demolition activities at the project site under the worst case scenario, impacts to landfill capacity would be considered less than significant.

The City of East Palo Alto is in compliance with the State of California's 50 percent annual waste diversion goal. As of 2006, the City diverted 82 percent of its waste (CalRecycle, 2012b).As required by the City of East Palo Alto's Recycling and Waste Diversion Ordinance, as a condition of the demolition permit, the City would be required to recover the maximum feasible amount of salvageable recyclable and reusable materials. Although no specific diversion goal is prescribed for public utility projects, adherence to the City's ordinance would help to reduce the total volume of waste disposed of at landfills, and any remaining waste requiring landfill disposal would not interfere with the City's ability to remain in compliance with solid waste statutes. Thus, the impact associated with compliance with statutes and regulations pertaining to solid waste would also be less than significant.

Mitigation: None required.

References – Utilities and Service Systems

City of East Palo Alto, 2011. *2010 Urban Water Management Plan* (UWMP), adopted June 21, 2011.

City of East Palo Alto, 2012. *Ravenswood/4 Corners Transit-Oriented Development Specific Plan Draft Environmental Impact Report*, Section 4.15 Utilities and Service Systems, pages 4.15-34 and 4.15-35, January 17, 2012.

CalRecycle, 2012a. Facility/Site Summary Details: Corinda Los Trancos Landfill (Ox Mountain) (41-AA-0002). Available online: www.calrecycle.ca.gov/SWFacilities/Directory/41-AA-0002/Detail/. Accessed December 27, 2012.

CalRecycle, 2012b. Jurisdiction Diversion/Disposal Rate Detail for East palo Alto, Reporting Year 2006. Available online: www.calrecycle.ca.gov/LGCentral/Reports/DiversionProgram/JurisdictionDiversionDetail.aspx?JurisdictionID=137&Year=2006. Accessed December 27, 2012.

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3.14 Public Services

This section describes existing public services (including police, fire protection, emergency medical service, and public schools) serving the project site. It evaluates the potential environmental impacts of the project to those public services.

Setting

Fire and Police Protection Services

The project site is located within the service area of the City of Menlo Park Fire Protection District. The District provides fire-protection and first-responder emergency-medical services to the communities of Atherton, East Palo Alto, Menlo Park, and portions of Unincorporated San Mateo County; population of approximately 90,000 residents. The District currently operates and maintains seven stations and responds to approximately 8,500 emergencies annually, with about 60 percent of such incidents being emergency medical emergencies. District Station #2 is located at 2290 University Avenue and is the closest station to the project site (approximately 0.3 miles south of the project site). This station provides fire protection and emergency medical services and is currently manned by three personnel (one captain and two firefighters) per shift and at least one crew member is a licensed paramedic (Menlo Park Fire Protection District, 2012).

The East Palo Alto Police Department provides criminal investigation and law enforcement services in the City. The Police Department operates from headquarters at 141 Demeter Street. The Police Department staffs approximately 48 sworn officers that cover a 2.5 square mile area and four designated police beats. According to the *2011 Crime Statistical Report*, the Police Department dealt with approximately 1,295 crimes, including 454 burglaries, 282 larcenies, 264 assaults, and 160 motor vehicle thefts (East Palo Alto Police Department, 2011).

Schools

Residents and employees of the City of East Palo Alto may send their children to the Ravenswood City School District (RCSD) for elementary and middle school. The RCSD operates seven elementary schools (grades K-8) and one intermediate school (grades 6-8). The closest elementary school to the project site is Cesar Chavez Academy/Green Oaks, which serves kindergarten through eighth grade and is located approximately 0.25 miles west of the project site. According to the School Accountability Report Card for these schools, the 2010–2011 student enrollment at Cesar Chavez Academy was 265 students, with an average classroom size of 24 students per classroom, and the enrollment at Green Oaks was 544 students, with an average classroom size of 22 students per classroom (RCSD, 2011). The Aspire East Palo Alto Phoenix Academy and Eastside College Preparatory School provide high school educational services within the City of East Palo Alto. The closest high school to the project site is the Aspire East Palo Alto Phoenix Academy, located approximately 0.45 miles east of the project site.

Parks

There are seven public City parks located within the City of East Palo Alto. These recreational facilities include the East Bayshore Road Park (approximately 0.06 acres in size), Matthai Grove Park (0.11 acres), Bell Street Park (5.0 acres), Jack Farrell Park (3.8 acres), Martin Luther King Park (5.4 acres), University Square Park (2.0 acres), and Joel Davis Park (2.0 acres). The closest park to the project site is Jack Farrell Park, which approximately 0.35 miles northeast of the site. In addition to these City-owned recreational areas, the Ravenswood School District owns approximately 37 acres of land at four school sites within East Palo Alto.

Please refer to Section 3.15, Recreation, for complete description and analysis of potential project-related impacts to parks and other recreational facilities.

Other Public Facilities

The East Palo Alto Public Library is located at 2415 University Avenue, and approximately 0.1 mile east of the project site. The library offers a variety of services for the general public, including computers, computer classes, educational programs, books, copying machines, and a learning center for students.

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
PUBLIC SERVICES — Would the project:					
PS-1	Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any public services such as fire protection, police protection, schools, parks, or other public facilities?	☐	☐	☐	☒

Impact Discussion for PS-1

During the 12-month construction period, up to seven construction workers would be employed at the project site, depending on the phase of construction and the construction activities taking place. It is expected that construction workers could come from any part of the Bay Area. While it is possible that some workers might temporarily relocate from other areas, the proposed project would not result in a substantial increase in the local population. Potential incidents requiring law enforcement, fire protection, or emergency services could occur during construction; however, any temporary increase in incidents would not exceed the capacity of local law enforcement, fire protection, and emergency facilities such that new or expanded facilities would be required. Any temporary increase in the local population during project construction would be negligible and

could be accommodated by existing service providers. Construction of the proposed project would not result in impacts related to the need for new or physically altered governmental facilities in order to maintain existing levels of public services.

The proposed project would not result in a permanent increase in the local population. Operation and post-construction maintenance activities would be similar to existing maintenance activities at the Gloria Way Well site and would not result in substantial increases in the demand for public services, including fire protection, police protection, libraries, schools, hospitals, or other services. Therefore, no impacts related to public services would occur.

Mitigation: None required.

References – Public Services

East Palo Alto Police Department, 2011. East Palo Alto Police Department 2011 Crime Statistical Report, 2011. Available online at: http://www.ci.east-palo-alto.ca.us/police/; accessed online November 30, 2012.

Menlo Park Fire Protection District, 2012. General information on Menlo Park Fire Protection District available online at: http://www.menlofire.org/about%20us.html; accessed online November 30, 2012.

Ravenswood City School District (RCSD), 2011. Cesar Chavez Academy and Green Oaks *School Accountability Report Cards from 2010 – 2011 School Year*, available online at: http://www.ravenswood.k12.ca.us/Page/109; accessed online November 30, 2012.

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3.15 Recreation

This section describes existing recreational resources serving the project site and evaluates the potential environmental impacts of the project on such resources.

Setting

There are seven public City parks located within the City of East Palo Alto. These recreational facilities include the East Bayshore Road Park (approximately 0.06 acres in size), Matthai Grove Park (0.11 acres), Bell Street Park (5.0 acres), Jack Farrell Park (3.8 acres), Martin Luther King Park (5.4 acres), University Square Park (2.0 acres), and Joel Davis Park (2.0 acres). The closest recreational park to the project site is Jack Farrell Park, which approximately 0.35 miles northeast of the site.

The Gloria Way Well site is located within ¼ mile of several schools, including Montessori School, Cesar Chavez Elementary School, Green Oaks Academy, and Magnolia Head Start. None of these schools have recreational fields located in close proximity to the Gloria Way Well site that could be indirectly affected by project construction activities.

There are no recreational trails in the vicinity of the project site.

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
RECREATION — Would the project:					
RE-1	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?	☐	☐	☐	☒
RE-2	Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

Impact Discussion for RE-1

The proposed project does not propose to construct new homes or businesses and would not increase the number of residents in the project area. Thus, implementation of the proposed project would not increase the use of recreational parks or other recreational facilities in the area. Therefore, this significance criterion is not applicable to the proposed project. No impact would result.

Mitigation: None required.

Impact Discussion for RE-2

The proposed project does not propose to construct recreational facilities and would not result in the need for new or expanded recreational facilities. Thus, the significance criterion related to the construction or expansion of recreational facilities is not applicable to the proposed project. No impact would result.

Mitigation: None required.

3.16 Mineral Resources

The California Geological Survey has classified lands within the San Francisco Bay Area into Mineral Resource Zones (MRZs) based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act (SMARA) of 1974 (Stinson et al., 1983). The project site is mapped by the California Department of Mines and Geology as "MRZ-1", which indicates a low likelihood of significant mineral resources (California Division of Mines and Geology, 1996). The San Mateo County General Plan includes a map of mineral resources within the County boundaries. No mineral resources are mapped in the vicinity of the Gloria Way Well site (San Mateo County, 1986).

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
MINERAL RESOURCES — Would the project:					
MR-1	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
MR-2	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Impact Discussion for MR-1 and MR-2

The intent of designating significant mineral deposits is to identify areas where mineral extraction could occur prior to development. The Gloria Way Well site is not mapped within, or in close proximity to, mineral resource deposits. As a result, the project not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; and would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impact would result.

Mitigation: None required.

References – Mineral Resources

California Division of Mines & Geology (CDMG), Update of Mineral Land Classification: Aggregate Materials in the South San Francisco Bay Production-Consumption Region, 1996.

San Mateo County, *San Mateo County General Plan, Mineral Resources Map*. November 1986.

Stinson, M. C., M. W. Manson, J. J. Plappert, and others, *Mineral Land Classification: Aggregate Materials in the San Francisco-Monterey Bay Area, Part II, Classification of Aggregate Resource Areas South San Francisco Bay Production-Consumption Region*, California Division of Mines and Geology Special Report 146, 1983.

3.17 Agriculture and Forest Resources

Setting

The project site is located in the central part of the City of East Palo Alto, and in the northwest quadrant at the intersection of Gloria Way and Bay Road. As indicated in the *San Mateo County Important Farmlands Map*, the project site is designated as "Urban and Built-Up Land". This designation is used for lands that are occupied by structures with a building density of at least one unit per 1.5 acres of land and commonly include residential, industrial, commercial, airports, and institutional uses as well as other community-serving uses, such as public utility buildings and golf courses (California Department of Conservation, 2008).

According to the *City of East Palo General Plan*, the project site is designated as Medium/High Density Residential, and the property is currently zoned for R-1-5000 (Single-Family Residential). Under such designations and classifications, the site and nearby properties are intended for single- and multi-family residential developments as well as neighborhood commercial uses. Although the project site is currently developed with the Gloria Way Well and related water supply facilities, the City's *Zoning Ordinance* states that public utilities are designated as a conditional uses within such residential zoning districts (City of East Palo Alto, 1999; 2002).

"Forest land" as defined by the California Public Resources Code Section 12220(g), is land that can support ten percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. "Timberland", per California Public Resources Code Section 4526, refers to land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees (California Public Resources Code, 2012).

Environmental Checklist and Discussion of Impacts

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
AGRICULTURE AND FOREST RESOURCES — Would the project:					
AF-1	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
AF-2	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
AF-3	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
AF-4	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
AF-5	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Impact Discussion for AF-1, AF-2, AF-3, AF-4, and AF-5

The project would involve demolition of existing well facilities currently located at the project site, with the exception of the existing well. As such, because the project site would continue to be used as a well site, there would be no substantial changes in use or functionality of the project site after implementation of the project. Furthermore, the project site is located in an urbanized area and by definition, is not considered prime farmland, forest land, or timberland.

Based on these findings, the project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use; would not conflict with existing zoning for agricultural use or a Williamson Act contract; and would not involve other changes in the existing environment which, due to the location or nature, could result in conversion of farmland to non-agricultural use. The project would have no impact on agricultural or forest resources.

Mitigation: None required.

References – Agriculture and Forest Resources

California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program. *San Mateo County Important Farmland 2006,* published February 2008.

California Public Resources Code. Online Research of California Public Resource Code Section 12220(g)-"Forest land" definition, and Section 4526-"Timberland" definition. Available online at http://www.leginfo.ca.gov/.html/prc_table_of_contents.html; accessed November 29, 2012.

City of East Palo Alto, 1999. *City of East Palo Alto General Plan*, Land Element (pp. 8-10), adopted December 1999.

City of East Palo Alto, 2002. *Zoning Code, Chapter 6, R-1(One-Family Residential District)*. http://www.ci.east-palo-alto.ca.us/planningdiv/pdf/EPA_Zoning_regs_2003.pdf; accessed November 29, 2012.

3.18 Mandatory Findings of Significance

		Potentially Significant and Unavoidable	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact or Not Applicable*
MANDATORY FINDINGS OF SIGNIFICANCE — Would the project:					
MFS-1	Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
MFS-2	Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
MFS-3	Have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Discussion for MFS-1

As discussed in Sections 3.9, Biological Resources, and 3.8, Cultural Resources, project construction activities have the potential to adversely affect nesting birds and result in damage to previously unrecorded archaeological resources, respectively. These impacts were conservatively determined to be potentially significant, but implementation of the mitigation measures prescribed in these sections would reduce these potential impacts to less-than-significant levels. Thus, this impact is considered less than significant with mitigation incorporation.

Discussion for MFS-2

Cumulative impacts are analyzed by environmental topic in Chapter 5, Cumulative Impacts. With implementation of the mitigation measures identified in this Joint IS/EA, the proposed project would not result in cumulatively considerable contributions to cumulative impacts. Thus, this impact is considered less than significant with mitigation incorporation.

Discussion for MFS-3

Construction of the project would occur over 12 months. Project construction activities could cause temporary but short-term impacts related to aesthetics; traffic and transportation; noise; air

quality; cultural resources; biological resources; hydrology and water quality; and hazards and hazardous materials; however, all potentially significant construction-related impacts would be reduced to a less-than-significant level with implementation of mitigation measures prescribed herein. The proposed project would not displace any housing nor would it degrade the environmental quality of the project site or surrounding area. The proposed operation of the Gloria Way Well would not result in substantial adverse effects on groundwater resources. The project would not result in a disproportionate adverse effect on Environmental Justice communities. Rather, the project would improve conditions for Environmental Justice communities by providing a backup emergency water supply and providing supplemental water supplies to support planned growth and economic development. This impact is less than significant.

CHAPTER 4
Other NEPA Requirements

4.1 Introduction

The National Environmental Policy Act (NEPA) requires consideration of physical and socio-economic impacts beyond those required by the California Environmental Quality Act (CEQA). This chapter addresses the additional considerations required by NEPA and provides the additional environmental documentation required by the U.S. Department of Housing and Urban Development (HUD) and the U.S. Environmental Protection Agency (U.S. EPA) prior to the agencies taking a federal action.

4.2 Environmental Justice (Executive Order 12898)

Executive Order No. 12898, issued by the federal government on February 11, 1994 ("Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations"), provides:

> To the greatest extent practicable and permitted by law…each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations (Subsection 1-101).
>
> . . . .
>
> Each Federal agency shall conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensure that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such programs, policies, and activities, because of their race, color or national origin (Subsection 2-2).
>
> . . . .
>
> Each Federal agency shall work to ensure that public documents, notices, and hearings relating to human health or the environment are concise, understandable, and readily accessible to the public (Subsection 5-5(c)).

A Presidential Memorandum that accompanied Executive Order No. 12898 emphasized that the order was "intended to promote nondiscrimination in Federal programs substantially affecting

human health and the environment, and to provide minority communities and low-income communities access to public information on, and an opportunity for public participation in, matters relating to human health or the environment." It also underscored the application of certain provisions of existing law, such as NEPA. Specifically, the memorandum notes that a NEPA analysis must include "effects on minority communities and low-income communities," and that mitigation measures "should address significant and adverse environmental effects of proposed Federal actions on minority communities and low-income communities" (Subsection 5-5(c)). In addition, "[e]ach Federal agency shall provide opportunities for community input in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of meetings, crucial documents, and notices" (Subsection 5-5(c)).

Thus, the Presidential Memorandum encourages wherever possible the use of existing requirements and procedures to accomplish the goals of the Executive Order No. 12898. Accordingly, this section first analyzes impacts on minority and low-income communities and then analyze whether the project meets community participation goals.

The methodology used in this Joint IS/EA for the analysis of Environmental Justice impacts is based on guidance provided by the U.S. EPA, HUD, and the Council on Environmental Quality (CEQ). The guidance documents define minority and low-income populations and specify the methods for evaluating whether disproportionately high and adverse environmental effects would occur on these populations.

A five-step method was used to determine if implementation of the proposed project would result in impacts on racial minorities and low-income populations. Steps 1 through 4 characterize the affected population. Step 5 identifies the significance criteria utilized to determine if the affected populations would be disproportionately affected. The five steps are as follows:

1. ***Identify Potential Effects*** – As required by NEPA and CEQA, a broad range of project-related potential environmental and human health effects have been evaluated. These include effects on: traffic and transportation; land use and land use planning; population and housing; aesthetics; cultural resources; public services; utilities and service systems; geology, soils, and seismicity; hydrology and water quality; biological resources, agriculture and forest resources; mineral resources; noise; air quality; greenhouse gas emissions; recreation; and hazards and hazardous materials. Potential impacts related to these topic areas are discussed in Sections 3.1 through 3.17 of this document.

2. ***Determine the Affected Geographical Area*** – The project would provide water supplies to the City of East Palo Alto. Therefore, the geographical area potentially affected by the project (and which provides the basis of this analysis) consists of the City of East Palo Alto and San Mateo County.

3. ***Determine the Demographic Character of the Affected Geographic Area*** – The demographic characteristics were determined for the affected geographic area. These include:

    - Total population;
    - Percent of population of racial minority status in East Palo Alto;

- Percent of population of racial minority status in San Mateo County;
- Percent of population of low-income status in East Palo Alto; and
- Percent of population of low-income status in San Mateo County.

Information on minority status of residents in the project area was gathered using U.S. Census data for the year 2010.

4. ***Determine if the Affected Populations Include Environmental Justice Communities*** – The affected populations are those populations within the affected geographic area. The following criteria, established by HUD for Community Development Block Grants and grants under the Home Investment Partnership Program, were utilized to determine if the affected community is an Environmental Justice community:

   - The population includes a concentration of minority populations above the County average of Hispanic or other minority populations; or
   - At least 51 percent of the population is of low-income status (earning 80 percent or less of the Median Family Income (MFI).

   Meeting any of the criteria listed above would qualify the community as an Environmental Justice community.

5. ***Determine Whether the Effects of the Project Would Disproportionately Affect Environmental Justice Communities*** – A significant impact would occur if a project-related impact would have a disproportionate effect on environmental justice populations. A disproportionate effect is defined as an effect that is predominantly borne, more severe, or of a greater magnitude in areas with environmental justice populations than in other areas. For purposes of this analysis, if a significant effect were to occur in the affected geographical area, then a disproportionate effect would be identified.

4.2.1 Minority and Racial Status

The project site is located within the City of East Palo Alto and is compared to data for San Mateo County. The ethnicity data for the City and San Mateo County is presented in **Table 4-1**. According to U.S. Census Data, the City of East Palo Alto's minority population is a much larger percentage of the population than San Mateo County's ethnic minority population.

4.2.2 Income Status

Data presented for income status and percentage of poverty are based on the Housing Element of the *City of East Palo Alto General Plan* (adopted in 2010), which states that the majority of households in East Palo Alto are defined as low-income (from 51 percent to 80 percent of Area Median Income), and the median household income in the City is substantially lower than the median household incomes of neighboring municipalities, including the Cities of Palo Alto and Menlo Park, and unincorporated San Mateo County. As presented in the Housing Element, East Palo Alto's median household income is approximately 60 percent of the median household income of unincorporated San Mateo County, 40 percent of Palo Alto's, and 47 percent of

TABLE 4-1
COMPARISON OF POPULATION ETHNICITY IN EAST PALO ALTO AND SAN MATEO COUNTY, 2010

	San Mateo County		East Palo Alto	
	Population	**Percent**	**Population**	**Percent**
Total Population[a]	712,536	100%	27,894	100%
One Race	513,435	72%	10,416	37%
White	306,996	43%	2,071	7%
Ethnic Minority	405,540	57%	25,823	93%
Black or African American	18,642	3%	4,760	17%
American Indian and Alaska Native	1,328	<1%	114	<1%
Asian	173,943	24%	948	3%
Native Hawaiian and Other Pacific Islander	10,468	1%	2,413	9%
Other race (alone)	2,058	<1%	110	<1%
Two or more races	21,274	3%	286	1%
Hispanic or Latino (of any race)	177,827	25%	17,192	62%

[a] Population represents individuals for whom ethnicity status is determined.

SOURCE: U.S. Census, 2010a.

Menlo Park's. Approximately 79 percent of East Palo Alto households have incomes defined as low-income or lower (14 percent below the poverty line). **Table 4-2** below, presents the household income distribution by income category, as defined by HUD.

TABLE 4-2
HOUSEHOLD INCOME DISTRIBUTION BY INCOME CATEGORY

Income Group	**Percent of Area Median Income**	**HUD Income Threshold[a]**	**Percentage of Households by Income Threshold**	
			East Palo Alto	**San Mateo County**
Extremely Low	<30%	$33,950	32%	18.4%
Very Low	31 - 50%	$56,550	24.1%	15.1%
Low	51 - 80%	$90,500	22.9%	21%
Moderate	81 - 120%	$114,000	7.8%	10.3%
Above	>120%	>$140,000	13.2%	35.2%

[a] Based on four-person households.

SOURCE: City of East Palo Alto, 2010a.

The State Housing Element Law defines "special needs" groups to include senior households (65 years of age or older), female-headed households, large households (five or more persons), disabled persons, homeless persons, and agricultural workers. As presented in the Housing Element, the City's main special needs groups are large households and unsheltered homeless persons, as the City has a larger proportion of these groups than most other cities in the area.

4.2.3 Standards of Significance

The project or its alternatives would have significant adverse environmental justice effects if they were to disproportionately affect Environmental Justice communities.

4.2.4 Environmental Analysis

As described above, to be considered an Environmental Justice community, ethnic minorities must consist of groups with above the County average of Hispanic population or other minority populations. Residents near the project area and throughout East Palo Alto would be considered an Environmental Justice community based on their ethnic minority status, because the City's minority population comprise of about 93 percent of the total population (compared to 57 percent for San Mateo County as a whole).

Based on income data provided in General Plan Housing Element, the residents of the area, which includes the project site, would be considered an Environmental Justice population based on income. The percentage of households in East Palo Alto earning incomes less than 80 percent of the County's area median income is approximately 79 percent, which is higher than the San Mateo County's 55 percent.

The project would involve the construction of facility improvements at the existing Gloria Way Well site. These improvements would: provide a backup water supply for the City in the event San Francisco Public Utilities Commission (SFPUC) supplies were interrupted during an emergency; secure supplemental water supplies to assist the City in meeting the anticipated near-term and long-term supply deficits; and support planned growth and economic development. The project would not discriminate against or cause an undue burden for an ethnic minority. The project would not result in disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations. In addition, the project clearly would not discriminate based on race, color, or national origin. Moreover, the environmental effects of the proposed project have been examined throughout this document in detail and without reference to minority status and income. Proposed mitigation measures would reduce all environmental effects to a less than significant level, regardless of ethnic minority status or income.

4.3 National Historic Preservation Act (Section 106)

Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended in 1992) requires Federal agencies to evaluate the effects of Federal undertakings on historical, archaeological, and cultural resources, and to consult with the Advisory Council on Historic Preservation concerning

potential effects of Federal actions on historic properties. Before Federal funds are approved for a particular project or prior to the issuance of any license, the effect of the project on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register shall be evaluated.

To comply with the NHPA, U.S. EPA sent the results of the cultural resources study completed for the project (presented in *Gloria Way Well Retrofit Project, East Palo Alto, San Mateo County, Final Cultural Resources Survey Report.* Prepared by Environmental Science Associates for the City of East Palo Alto and the U.S. Environmental Protection Agency, December 2012) to the State Historic Preservation Officer (SHPO), who acts as an intermediary for the Advisory Council on Historic Preservation. U.S. EPA recommended a finding of No Historic Properties Affected and requested SHPO review and input on those findings (ESA, 2012a).

4.3.1 Native American Consultation

Implementing regulations for Section 106 require that Federal agencies identify interested parties including Native American tribes that might have knowledge of sites of religious and cultural significance in the Area of Potential Effects (APE) (36 CFR 800.3[f][2]). The regulations require that Federal agencies invite Indian tribes to participate in the Section 106 process as consulting parties.

ESA submitted a sacred lands search request to the Native American Heritage Commission (NAHC) on September 18, 2012. A response from the NAHC was received via letter dated September 25, 2012. A records search of their sacred land file failed to indicate the presence of Native American cultural resources in the immediate vicinity of the APE. The NAHC also provided a list of Native American individuals and organizations who might have additional information or concerns. As part of the Section 106 process, letters to these individuals were sent directly from the federal lead agency (U.S. EPA) to initiate government-to-government consultation (ESA, 2012a).

4.4 Archeological and Historic Preservation Act (16 U.S.C. §469a-1)

The Archaeological and Historic Preservation Act (AHPA) requires Federal agencies to identify relics, specimens, and other forms of scientific, prehistorical, historical, or archeological data that may be lost during the construction of federally sponsored projects. If such items are discovered, the Secretary of the Interior must be notified and may undertake recovery, protection, or preservation of the data or recommend measures to mitigate potential losses.

Mitigation Measure CR-2 (Unanticipated Discovery of Archaeological Resources), described in Section 3.8, Cultural Resources, of this document outlines provisions for the accidental discovery of cultural materials during project implementation including stop work procedures and the design of an appropriate short-term and long-term treatment plan for culturally significant

archaeological resources. If the find is determined to be culturally significant, the City would be required to contact the U.S. EPA who, in turn, would contact the Secretary of the Interior who could undertake additional actions to mitigate potential losses (ESA, 2012a).

4.5 Other Legislative Acts and Executive Orders

In addition to the earlier discussion of Executive Order 112898 (concerning Environmental Justice), and Section 106 of the National Historic Preservation Act, there are a number of other legislative acts and executive orders that must be considered prior to undertaking a federal action. The following list is abstracted from HUD's Statutory Checklist (24CFR58.5) and the U.S. EPA's Statutory Checklist for federal programs, statutes, and executive orders. A determination of the proposed project's compliance with these acts and orders is also presented.

4.5.1 Clean Water Act (Section 404)

As described in Section 3.11, Hydrology and Water Quality, the construction contractor(s) would be required to comply the City of East Palo Alto's ordinances for grading and land clearing activities. Mandatory compliance with these ordinances would serve to protect water quality in downstream receiving water bodies. In addition, the potential for project construction activities to result in the accidental release of hazardous construction chemicals that could adversely affect water quality would be mitigated by implementation of **Mitigation Measure HY-1 (Construction Best Management Practices)**, which prescribes best management practices that would be implemented during construction to protect water quality. Project operations would not involve any discharges to waterbodies that could adversely affect water quality. Thus, the proposed project would be consistent with this Act.

4.5.2 Floodplain Management (Executive Order 11988)

The project site does not lie within a 100-year flood hazard zone, as described in Section 3.11, Hydrology and Water Quality, p. 3.11-2. This determination was made based on review of the Flood Insurance Rate Map for the project site (FEMA, 2012).

4.5.3 Wetlands Protection (Executive Order 11990)

As described in Section 3.9, Biological Resources, there are no jurisdicational wetlands within or in the immediate vicinity of the project site. Project implementation would not directly affect any wetlands, and would not be expected to adversely affect wetlands located offsite or in downstream receiving waterbodies (ESA, 2012b).

4.5.4 Coastal Zone Management Act (16 U.S.C. §§1451-1466)

The project site lies approximately one mile inland of the San Francisco Bay and does not lie within a coastal zone. Accordingly, this Act does not apply to the proposed project.

4.5.5 Coastal Barrier Resources Act (16 U.S.C. §§3501-3510)

The project site would not be located at or adjacent to ecologically sensitive barrier formations along the Atlantic and Gulf Coasts of the United States or the shores of areas of the Great Lakes. Therefore, this Act does not apply to the proposed project.

4.5.6 Sole Source Aquifers (40CFR149)

The project site overlies within the San Francisquito Creek Groundwater Subbasin, which is part of the larger Santa Clara Valley Groundwater Basin. The San Francisquito Creek Groundwater Subbasin and the Santa Clara Valley Groundwater Basin are used by surrounding areas as a supplemental drinking water supply source. As noted in Section 3.11, Hydrology and Water Quality, implementation of the proposed project would increase in impervious surfaces by up to 530 square feet. This reduction would not be interfere with groundwater recharge such that groundwater levels were adversely affected. Implementation of **Mitigation Measure HY-1 (Construction Best Management Practices)** would adequately minimize any potential adverse impacts to groundwater quality associated with spills of hazardous materials during construction.

4.5.7 Endangered Species Act (16 U.S.C. §§1531-1599)

As described in Section 3.9, Biological Resources, no endangered plant or wildlife species occur within or in the vicinity of the project site. Thus, implementation of the proposed would not adversely affect any endangered plant or wildlife species (ESA, 2012b).

4.5.8 Essential Fish Habitat Consultation Process under the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§1801-1891)

The project would not result in the direct or indirect habitat loss of fish, nor would the project result in an adverse effect to fish and related species off the coasts of the United States. Furthermore, the project would not threaten stocks of fish or contribute to increased fishing pressure, inadequacy of fishery resource conservation and management, or diminished capacity to support existing fishing levels. Therefore, this Act does not apply to the proposed project.

4.5.9 Safe Drinking Water Act (40 U.S.C. §§300f-300j-26)

As described in Chapter 2, Project Description, implementation of the proposed project would address concerns regarding compliance with secondary drinking water standards associated with groundwater pumped from the Gloria Way Well. The proposed project would comply with this Act.

4.5.10 Wild and Scenic Rivers Act (16 U.S.C. §§1271-1287)

The project site does not lie within one mile of a listed wild and scenic river or have an effect on the natural, free flowing or scenic qualities of a river in the National Wild and Scenic Rivers system (NPS, 2013).

4.5.11 Clean Air Act Conformity (42 U.S.C. §7506(c))

The project site lies within a non-attainment area but the project would conform to the State Implementation Plan and would not result in an exceedance of any of the national ambient air quality standards. Please see the discussion and analysis presented in Section 3.6, Air Quality.

4.5.12 Farmland Protection Policy Act (7 U.S.C. §§4201-4209)

The Farmland Protection Policy Act identifies lands not covered by the Farmland Protection Policy Act under Section 523.10(B). These lands include land identified as "urbanized area" on Census Bureau maps, and land with a "tint overprint" on the USGS topographical map. The project site is identified as a urbanized area by Census Bureau maps and land with a tint overprint on USGS topographical maps, and is therefore not subject to the Farmland Protection Policy Act (U.S. Census, 2010b). Furthermore, the project site is designated as "Urban and Built-Up Land" in the *San Mateo County Important Farmlands Map* (CDC, 2008), which is consistent with the guidelines in the Farmland Protection Policy Act and National Resources Inventory for mapping urban built-up areas. See Section 3.17, Agriculture and Forest Resources.

4.5.13 Noise Abatement and Control (24CFR51B)

The project include an existing well pump that once activated, would generate a noise level of approximately 60 dBA at 50 feet, which equates to approximately 70 dBA at a distance of 15 feet, which is the distance to the closest residential property line. This noise level would exceed the HUD's exterior noise standard of 65 Ldn or CNEL.[1] Mitigation measures were proposed to reduce noise levels generated by the project and would ensure that potential effects due to noise exposure would not be significant. See Section 3.5, Noise.

4.5.14 Toxic Chemicals and Radioactive Materials (24CFR58 Section 5(i)(2))

A regulatory agency list search was performed using the California Department of Toxic Substances Control (DTSC) EnviroStor database and the California State Water Resources Control Board (SWRCB) GeoTracker database. The project site was not listed in any of the databases. Although multiple sites with documented releases of hazardous substances and/or petroleum products are located within a ½-mile of the project site, there is no indication that

[1] HUD allows for the determination of noise levels either by calculating these levels (e.g., as described in HUD's Noise Assessment Guidelines) or by taking 24-hour measurements on the site.

contamination plumes originating from documented contamination sites have migrated to the project site (DTSC, 2012; SWRCB, 2012). See Section 3.12, Hazards and Hazardous Materials.

4.5.15 Explosive and Flammable Operations (24CFR51C)

Implementation of the proposed project would not expose people or buildings to explosive or flammable operations. See Section 3.12, Hazards and Hazardous Materials.

4.5.16 Airport Clear Zones and Accident Potential Zones (24CFR51D)

The nearest public airport is the Palo Alto Airport in Santa Clara County, which is located about two miles southeast of the project site in the City of Palo Alto, California. As presented in the County of Santa Clara Airport Land Use Commission (ALUC) *Comprehensive Land Use Plan for Palo Alto Airport*, the project site does not lie within its clear zones or the accident potential zones (County of Santa Clara Airport Land Use Commission, 2008).

4.6 Evaluation of the No Project Alternative

NEPA requires the evaluation of a No Action Alternative to allow decision makers to compare the impacts of approving a project with the impacts of not approving the project. The No Action Alternative represents the environmental baseline for this project.

4.6.1 Description of the No Action Alternative

Under the No Action Alternative, the proposed project (proposed action) would not be implemented. The proposed improvements to the Gloria Way Well site would not be constructed. Groundwater pumped from the Gloria Way Well would continue to violate secondary drinking water standards, and use of the Gloria Way Well would continue to be limited to non-potable uses. The City would continue to rely on the SFPUC for potable water supplies. In the event of an emergency resulting in the interruption of SFPUC water supplies, the City would be without potable water for consumption, sanitation, and emergency (fire suppression) uses. Further, the City could face short-term water supply shortages and would not have sufficient water supplies to support future planned growth and economic development.

4.6.2 Environmental Analysis

This alternative would entail no changes to the existing facilities at the Gloria Way Well site. The site would remain in its current condition and the well would be operated intermittently for non-potable purposes. The No Project Alternative would avoid all potentially significant impacts identified for the proposed project. No construction or operational impacts to aesthetics; air quality; biological resources; cultural resources; geology, soils, and seismicity; hazards and hazardous materials; hydrology and water quality; noise; or traffic and circulation would result. The No Project Alternative would continue the underutilization of the existing Gloria Way Well.

4.6.3 Ability to Meet Project Objectives

The No Project Alternative would fail to meet the project objectives of: (1) securing supplemental water supplies to meet projected supply deficits and support planned growth and economic development; (2) securing backup potable water supplies for use in the event of a catastrophic emergency resulting in the interruption of SFPUC supplies.

References – Other NEPA Requirements

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CHAPTER 5
Cumulative Impacts

5.1 Introduction

Cumulative impacts, as defined in Section 15355 of the CEQA Guidelines, refer to two or more individual effects that, when taken together, are "considerable" or that compound or increase other environmental impacts. A cumulative impact from several projects is the change in the environment that would result from the incremental impact of the project when added to those of other closely related past, present, or reasonably foreseeable future projects. Pertinent guidance for cumulative impact analysis is provided in Section 15130 of the CEQA Guidelines:

- A project's contribution is less than cumulatively considerable, and thus not significant, if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.
- The discussion of impact severity and likelihood of occurrence need not be as detailed as for effects attributable to the project alone.
- The focus of analysis should be on the cumulative impact to which the identified other projects contribute, rather than on attributes of the other projects that do not contribute to the cumulative impact.

5.2 Approach to Cumulative Impact Analysis

Two approaches to a cumulative impact analysis are discussed in CEQA Guidelines Section 15130(b) (1): (a) the analysis can be based on a list of past, present, and probable future projects producing related or cumulative impacts, or (b) a summary of projections contained in a general plan or related planning document or in an adopted or certified environmental document that described or evaluated regional or areawide conditions contributing to the cumulative impact can be used to determine cumulative impacts. For the purpose of this analysis, the analysis employs the list-based approach. The following factors were used to determine an appropriate list of projects to be considered in this cumulative analysis:

- ***Cumulative Projects Considered are Reasonably Foreseeable*** – A relevant future project is defined as one that is "reasonably foreseeable," such as a proposed project that: has approved funding; is included as part of a Capital Improvement Program, Water Supply Master Plan, or other planning document; or for which an application has been filed with the approving agency. Although it is possible that some of the reasonably foreseeable future projects will not be approved or will be modified prior to approval (e.g. as a result of the CEQA alternatives analysis process or permitting requirements); the cumulative impact

analysis is premised on the approval and construction of all of the reasonably foreseeable projects identified in this analysis.

In addition, the cumulative groundwater analysis considers the proposed future pumping at the Gloria Way Well in combination with: (a) existing pumping in the subbasin by other users; (b) future production wells planned by East Palo Alto and other municipalities; and (c) planned increases in groundwater pumping, as documented in Urban Water Management Plans (UWMPs) for municipal water purveyors or as estimated for mutual water companies and institutional wells.

- ***Similar Environmental Effects*** – A relevant cumulative project would contribute to effects on resources also affected by the proposed project. For all resources except groundwater, this analysis focuses on potential cumulative effects associated with construction activities. Construction activities associated with the Gloria Way Well Retrofit project would cause temporary albeit short-term impacts related to aesthetics; traffic and transportation; noise; air quality; cultural resources; biological resources; hydrology and water quality; and hazards and hazardous materials. With respect to operational impacts, the project-level analysis determined that the proposed pumping from the Gloria Way Well would not result in significant adverse effects on groundwater resources or subsidence; however, proposed pumping from the Gloria Way Well, in combination with existing pumping by other groundwater users and planned increases in groundwater pumping in the future, are evaluated to determine if the proposed project's contribution to this effect would be cumulatively considerable.

- ***Geographic Scope and Location*** – A relevant cumulative project is located within the defined geographic scope for the cumulative effect. In general, the geographic scope is comprised of the immediate project vicinity. However, for some resource topics, the geographic scope can extend further, such as the San Francisquito Creek Groundwater Subbasin or the regional roadway network.

- ***Timing and Duration of Implementation*** – The effects associated with a relevant project that are relevant to the cumulative analysis (e.g., short-term construction activities or long-term groundwater pumping) would likely coincide in timing with, or come shortly before or shortly after, the effects of the proposed project. The proposed duration of construction activities at the Gloria Way Well project site is 12 months; overall project construction is scheduled to begin in early 2014, with completion in early 2015. For operational effects, implementation of the proposed project would increase pumping at the Gloria Way Well from approximately 5 acre-feet per year (AFY) to 420 AFY into the future.

5.3 List of Relevant Projects

Table 5-1 presents the projects considered in the cumulative impact analysis for construction-related effects.

As the proposed project would be constructed in a highly urbanized area, there are no planned development projects in the vicinity of the project site. The vacant lot at the corner of University Avenue and Bay Road is planned for development under the Ravenswood / 4 Corners Transit-Oriented Development Specific Plan and is envisioned to include ground-floor retail shops and upper-floor dwellings or offices (City of East Palo Alto, 2012). Because planned development associated with the Specific Plan is anticipated to occur anytime between 2016 and 2035, it is

TABLE 5-1
PROJECTS CONSIDERED IN THE CUMULATIVE IMPACT ANALYSIS

Cumulative Project	Description	Potential Cumulative Impact Topics	Estimated Schedule
Bay Road Improvements Phase 2	This project includes pedestrian and vehicular safety improvements along Bay Road between Clarke Avenue and Tara Street. Specific improvements include new street pavement, raised medians, new curb, gutter, sidewalk, storm drainage and street lighting. The project also includes tree planting, installation of irrigation systems, bike lanes, and other pedestrian safety and streetscape improvements.	Traffic and traffic safety hazards	2014 to 2016
Bay Road Improvements Phase 3	Similar to the Phase 2 project, this project includes pedestrian and vehicular safety improvements along Bay Road between Tara Road and Cooley Landing.	Traffic and traffic safety hazards	2014 to 2016

SOURCES: City of East Palo Alto, 2011; Fallaha, 2013.

unlikely that construction activities for the proposed project would contribute to cumulative construction impacts associated with the Specific Plan.

5.4 Cumulative Analysis

The analysis of direct project impacts in Chapter 3 of this Joint IS/EA determined that the proposed project would have no impact or no effect on the following resource topics: land use and land use planning; recreation; agriculture and forest resources; population and housing; public services; and mineral resources. Therefore, it would not be possible for the project to contribute to cumulative impacts related to these topics. Cumulative air quality impacts are addressed in Section 3.6, Air Quality. The analysis of greenhouse gas emissions during project construction and operations is cumulative by nature and is addressed in Section 3.7, Greenhouse Gas Emissions. Thus, these topics are not considered in the cumulative analysis; the remaining topics are discussed below.

Aesthetics. The geographic scope of potential cumulative aesthetic impacts encompasses the project site and immediate vicinity. Construction activities associated with the Gloria Way Well Retrofit project and the Bay Road Improvements Phase 2 and Phase 3 projects could temporarily degrade the visual character of the project area, a potentially significant cumulative impact. However, with implementation of **Mitigation Measures AE-1 (Maintain Clean and Orderly Construction Site)**, the proposed project's contribution to cumulative land use and aesthetics impacts would not be considerable (less than significant).

Tree and vegetation removal associated with the proposed project has the potential to result in a long-term effect on aesthetics. Since the cumulative projects listed in Table 5-1 would be expected to improve visual quality in the long-term, no cumulative impact would result.

Traffic and Transportation. The geographic scope of potential cumulative traffic and transportation impacts encompasses the regional and local road networks. As discussed in Section 3.4, Transportation and Circulation, construction of the Gloria Way Well Retrofit project could result in increased traffic safety hazards and temporary traffic delays, particularly when construction activities occurs within the Gloria Way and Bay Road right-of-ways. Implementation of **Mitigation Measure TR-1 (Traffic Control Plan)** would ensure that adverse impacts on Bay Road, Gloria Way, and the surrounding circulation system would be reduced to a less-than-significant level. Cumulative construction-related traffic impacts on Bay Road could occur if construction schedules of the Bay Road Improvements projects (Phases 2 and 3) coincided with the proposed project. However, due to the minimal construction-related vehicle trips associated with the proposed project and the short duration of construction within the Bay Road right-of-way (up to one week), Mitigation Measure TR-1 would be sufficient in ensuring the proposed project's contribution to these impacts is not cumulatively considerable. Consequently, the project's contribution to cumulative transportation and circulation impacts would be less than significant with implementation of project-specific mitigation measures.

The proposed project would not adversely affect traffic and transportation during project operations. Thus, no cumulative impact would result.

Noise. The geographic scope of potential cumulative impacts for noise encompasses the project site and surrounding parcels. As described in Section 3.5, Noise, construction activities associated the Gloria Way Well Retrofit project could result in short-term noise impacts. Because construction activities associated with the Bay Road Improvement projects (Phase 2 and 3) would occur at a distance of 0.4 miles or more from the Gloria Way Well site, no cumulative impacts associated with nuisance construction noise would result. Similarly, the operational noise impacts associated with the proposed project would not overlap with any long-term noise increases associated with the cumulative projects due to distance. Therefore, the project's contribution to cumulative noise impacts would not be cumulatively considerable (less than significant).

Cultural Resources. The geographic scope of potential cumulative impacts on cultural resources encompasses the area of potential effects (APE) for the proposed project. The proposed project would not affect historic resources but could result in impacts to archaeological resources and human remains if these resources are inadvertently disturbed during construction. Since the Bay Road Improvements projects (Phase 2 and 2) would not overlap geographically with the proposed project, no cumulative impact to archaeological resources or human remains would result.

Biological Resources. The geographic scope of potential cumulative impacts for biological resources encompasses the project site and areas in the region that contain the same sensitive biological resources as the project. As discussed in Section 3.9, Biological Resources, no special status plant and animal species, sensitive habitats, or wetlands occur within or near the Gloria Way Well site. Construction of the proposed project has the potential to adversely affect nesting birds. However, implementation of Mitigation Measure BIO-1 (Measures to Minimize Disturbance to Nesting Birds) would address any potential direct and cumulative effects associated with the proposed project. Tree removal associated with the proposed project would be conducted in accordance with the City's tree protection ordinance and would not contribute to cumulative impacts associated with conflicts with the local tree ordinance. Therefore, the proposed project's contribution to cumulative biological resources impacts would not be cumulatively considerable (less than significant).

Geology, Soils, and Seismicity. The geographic scope of potential cumulative geologic and seismic impacts encompasses the project area and immediate vicinity. Because construction activities associated with the Bay Road Improvement projects (Phase 2 and 3) would occur at a distance of 0.4 miles or more from the Gloria Way Well site, no cumulative construction-related or facility siting impacts associated with geology, soils, and seismicity would result. However, the proposed increase in groundwater pumping associated with the proposed project, in combination with increased groundwater pumping by other users in the area, could increase the risk of land subsidence.

As stated in Section 3.10, Geology, Soils, and Seismicity, land subsidence of more than two feet was measured in East Palo Alto and Palo Alto between 1934 and 1967, when excessive groundwater pumping lowered groundwater elevations below sea level (up to 140 feet below mean sea level [msl] at the Hale Well in Palo Alto), thereby inducing compression of the overlying clay materials and land subsidence. It is estimated that total annual pumping from the San Francisquito Creek Groundwater Subbasin amounted to approximately 7,500 acre-feet per year (AFY) prior to 1962.

The estimated total annual pumping in the San Francisquito Creek Groundwater Subbasin under current and future conditions is presented in **Table 5-2**. Accounting for the proposed pumping at the Gloria Way Well and current pumping by other users, total annual pumping in the subbasin with implementation of the proposed project is estimated at 2,950 AFY (direct project effects). Under future cumulative conditions (i.e., the sum of proposed pumping at Gloria Way Well, pumping from future planned East Palo Alto production wells, and anticipated future pumping by other users), total future pumping in the subbasin is estimated at 4,495 AFY.

While future groundwater pumping in the subbasin may approach 4,500 AFY, the level of overdraft that occurred in the aquifer between 1934 and 1967 when pumping was as high as 7,500 AFY is not expected because the region now has access to supplemental water supplies from the San Francisco Public Utilities Commission's (SFPUC) regional water system, and because former agricultural

TABLE 5-2
ESTIMATED EXISTING AND FUTURE GROUNDWATER PUMPING (AFY)

	Year						Emergency Supplies Only
	Existing (2010)	2015	2020	2025	2030	2035	
Atherton Private and Institutional Wells[a]	710	890					-
Private Wells (East Palo Alto, Palo Alto, Menlo Park, and Redwood City)[a]	170	215					-
O'Connor Tract Cooperative Water Company[b]	280	300					-
Palo Alto Park Mutual Water Company[c]	523	550					-
USGS, St Patricks Seminary, Menlo College, and Veterans[a]	500	500					-
Stanford University[a]	342	410					-
City of East Palo Alto - Gloria Way Well[d]	5	420	420	420	420	420	-
City of East Palo Alto - Planned Production Wells[e]	-	1,210	1,210	1,210	1,210	1,210	-
City of Menlo Park[f]	0	0	0	0	0	0	4,840
City of Palo Alto[g]	0	0	0	0	0	0	1,500
City of Redwood City[h]	0	0	0	0	0	0	-
TOTALS =	**2,530**	**4,495**	**4,495**	**4,495**	**4,495**	**4,495**	**N/A**

SOURCES:

[a] Todd Engineers, 2012.
[b] Current Pumping - O'Connor Tract Co-Operative Water Co., 2013. Future Pumping - Estimated.
[c] Current pumping - Todd Engineers, 2012. Future pumping - Estimated.
[d] Current pumping - IRM, 2010; City of East Palo Alto, 2012. Future pumping - Operations under the proposed project.
[e] City of East Palo Alto, 2011.
[f] City of Menlo Park, 2011.
[g] City of Palo Alto, 2011.
[f] City of Redwood City, 2011.

lands in the region have been converted to urban land uses (which use less water). The land subsidence of approximately two feet that occurred historically occurred at the time that total pumping was 7,500 AFY. Because the clay units in the aquifer have already been compacted, any additional subsidence would be minor. Potential impacts associated with land subsidence would therefore be considered less than significant.

Although the proposed project's contribution to potential cumulative subsidence effects would not be cumulatively considerable, **Improvement Measure C-HYD-1 (Groundwater Monitoring Program)** is proposed to collect data that would allow the City and neighboring municipal pumpers to more accurately characterize groundwater conditions and track future changes in water levels, water quality, and storage in the groundwater basin.

Improvement Measure C-HYD-1: Groundwater Monitoring Program.

The City will implement a groundwater monitoring program to support the City and neighboring municipalities in evaluating current and future groundwater subbasin storage, flow, and quality conditions, identify areas of concern and data gaps, and support groundwater management activities. Key components of the monitoring program include:

- Establishment of a groundwater monitoring well network.
- Routine groundwater elevation monitoring.
- Routine water quality monitoring program.
- Land subsidence monitoring.
- Groundwater production tracking.
- Development of a data evaluation and reporting program, including QA/QC procedures.

Depending on the availability of funding and on coordination efforts with neighboring municipalities, it is possible that the groundwater monitoring program will not be initiated prior to implementation of the project. The City will document progress in annual reports to City Council.

Hydrology and Water Quality. The geographic scope of potential cumulative hydrology and water quality impacts encompasses the San Francisquito Creek watershed and San Francisquito Creek Groundwater Subbasin. Construction activities associated with the proposed project, in combination with construction activities associated with cumulative projects, have the potential to result in cumulative water quality impacts from increased sedimentation of receiving downstream waterbodies and/or the inadvertent release of hazardous construction chemicals. However, the proposed project's contribution to this impact would not be cumulatively considerable (less than significant) due to the nature of construction activities, with compliance with the City's erosion control plan requirements; and with implementation of **Mitigation Measure HY-1 (Construction Best Management Practices)**.

Total future groundwater pumping in the San Francisquito Creek Groundwater Subbasin, including proposed pumping at the Gloria Way Well and future planned pumping by East Palo Alto and other groundwater users, is estimated at 4,495 AFY. This increase in pumping could potentially lower regional groundwater levels and induce saline water intrusion. The proposed project's contribution to this impact would be cumulatively considerable (potentially significant). However, with implementation of **Mitigation Measure C-HYD-1 (Saline Intrusion Measures)**, which is consistent with **Improvement Measure C-HYD-1 (Groundwater Monitoring Program)**, described above, the proposed project's contribution to this cumulative impact would be reduced to less-than-significant.

Mitigation Measure C-HYD-1: Saline Intrusion Measures

Prior to bringing the Gloria Way Well online, the City shall implement a program to monitor chloride concentrations and other indicators of saline intrusion. The monitoring shall be conducted in all monitoring wells that are screened in the deep aquifer and that are accessible to the City (as well as in all future planned City-owned monitoring and production wells, if ultimately implemented). The monitoring shall focus on the water quality in the deep aquifer zones intersected by the Gloria Way Well. If no other groundwater wells are available for monitoring, monitoring shall be conducted exclusively at the Gloria Way Well.

The City shall initiate the program prior to the start-up of the Gloria Way Well to collect baseline groundwater quality data and shall continue the program throughout the operational life of the Gloria Way Well. Routine monitoring shall begin at the time the Gloria Way Well is brought on-line. Monitoring frequency shall be consistent with Department of Public Health monitoring requirements for public water systems but shall be no less than once per year. If chloride concentrations exceed the upper Maximum Contaminant Limit (MCL) of the California Secondary Drinking Water Standards (500 milligrams per liter) during routine groundwater monitoring, then the City shall collect a subsequent verification sample within 90 days after the routine monitoring was conducted. If elevated chloride concentrations are also detected in the verification sample, then the City shall conduct a geochemical analysis to determine if the elevated chloride concentrations are being caused by seawater intrusion or by other causes (i.e., improperly abandoned wells can act as a conduit through which contaminants can reach an aquifer). If the results of the geochemical analysis indicate that pumping at the Gloria Way Well is increasing saline water intrusion, the City shall initially reduce pumping at the Gloria Way Well by 25 percent or more, and continue adjusting pumping operations until chloride concentrations are stabilized. If monitoring data indicates there is a combined influence from production wells in other municipalities, the City shall coordinate with those municipalities to develop a regional plan to reduce the landward advance of saline water intrusion.

Hazards and Hazardous Materials. The geographic scope of potential cumulative hazards and hazardous materials impacts encompasses the project site and immediate vicinity. Hazards and hazardous materials impacts are generally site-specific and depend on past, present, and future industrial uses and existing soil, sediment, and groundwater conditions. The proposed project would comply with all applicable federal and state regulations pertaining to the handling, use, and disposal of hazardous substances as well as all applicable requirements associated with preparation and implementation of a Hazardous Material Business Plan. Similar to the proposed project, construction activities associated with the cumulative projects could result in the inadvertent release of hazardous construction chemicals or contaminated soil into the environment, a potentially significant cumulative impact. However, with implementation of **Mitigation Measures HZ-1 (Hazardous Materials Handling and Disposal)** and **HY-1 (Construction Best Management Practices)**, the proposed project's contribution to this impact would not be cumulatively considerable (less than significant).

Utilities and Service Systems. The geographic scope of potential impacts on utilities and service systems is limited to the immediate project vicinity where services could be disrupted. For landfill capacity, the geographic scope includes the service areas where disposal of construction-related waste could occur. For compliance with solid waste statutes and regulations, the geographic area encompasses the City of East Palo Alto. As described in Section 3.13, the proposed project would not conflict with wastewater or water supplies nor would it require the construction of new water or wastewater facilities. The proposed project would also comply with the State's annual waste diversion goals. Since the Bay Road Improvements Project (Phases 2 and 3) and the Cooley Landing Project would also be required to comply with the same solid waste statutes, cumulative utilities and service system impacts would be less than significant.

References – Cumulative Impacts

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City of East Palo Alto, 2011. *2010 Urban Water Management Plan*. Adopted June 21, 2011.

City of East Palo Alto, 2012. *Ravenswood / 4 Corners Transit-Oriented Development Specific Plan*. Adopted September 2012.

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City of Redwood City, 2011. *2010 Urban Water Management Plan.* Adopted June 13, 2011.

Fallaha, Kamal, City of East Palo Alto, City Engineer, Telephone conversation re: status of Capital Improvement Program, January 2013.

Integrated Resource Management, Inc. (IRM), 2010. *City of East Palo Alto Water System Master Plan*. October 19, 2010.

O'Connor Tract Co-Operative Water Company, 20152. "Pumping plant and wells located at 211 Oak Court, Menlo Park, CA." Response to East Palo Alto's request for information. Submitted January 21, 2013.

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APPENDIX 1

Final Cultural Resources Survey Report

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ESA

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December 5, 2012

Cheryl A. McGovern
Environmental Protection Specialist
U.S. Environmental Protection Agency
75 Hawthorne Street (WTR-4)
San Francisco, California 94105

Subject: Cultural Resources Survey Report – Gloria Way Well Project

Dear Ms. McGovern:

Enclosed please find the Final Cultural Resources Survey Report for the Gloria Way Well Project in East Palo Alto, San Mateo, California. The background research or surface survey did not identify any cultural resources within the Area of Potential Effects (APE).

The APE is in an area mapped as Holocene alluvial deposits. This geologic formation has a very high potential to contain prehistoric archaeological sites buried by natural alluvial processes. Two buried sites with human remains have been previously identified within a ½-mile radius of the Project APE. Based on the geoarchaeological assessment there is potential for deeply-buried, well-developed soil horizons to be in the APE, and therefore potential for archaeological resources associated with those buried soils.

The Project proposes a maximum ground disturbance depth of 3 to 5 feet in previously disturbed areas. Narrow (average 3-foot-wide) and linear ground-disturbance is proposed to connect to the pipeline in Gloria Way, with a maximum depth of 5 feet. Surface observations during the survey indicate previous disturbance associated with well development and utilities installation. As noted above the Project area has the potential for well-developed buried soils, however existing infrastructure prohibits comprehensive access for a subsurface investigation such as exploratory trenching or augering. The existing infrastructure also most certainly disturbed the substrata in the Project area. For this reason, no additional subsurface investigations are recommended at this time.

There is the possibility that previously undocumented archaeological resources are uncovered as a result of proposed Project activities. Damage or destruction of a significant archaeological resource would be an adverse effect. The following actions are recommended during Project implementation:

- **Retention of a Qualified Archaeologist.** Prior to the start of any ground-disturbing activity, the City shall retain a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for archaeology (Department of the Interior, 2012), to carry out all mitigation measures related to archaeological resources.

- **Cultural Resources Training.** The qualified archeologist, or an archaeologist working under the direction of the qualified archaeologist, shall conduct pre-construction cultural resources worker sensitivity training to inform construction personnel of the types of cultural resources that may be encountered, and to bring awareness to personnel of actions to be taken in the event of a cultural resources discovery. The City shall complete training for all construction personnel and retain documentation showing when training of personnel was completed.

- **Development of a Cultural Resources Monitoring and Mitigation Plan.** The qualified archaeologist shall develop a Cultural Resources Monitoring and Mitigation Plan (Plan) based on Project plans and any other relevant information. The Plan shall specify the location, duration and timing of monitoring, which shall occur from the time of initial ground disturbance until a depth at which the potential to encounter buried archaeological deposits is greatly reduced. The Plan shall also establish emergency procedures applicable to the discovery of unanticipated significant archaeological resources. The Plan shall state that avoidance or preservation in place shall be the preferred means of mitigating impacts to archaeological resources. The Plan shall include, at a minimum, procedures for: the re-direction of ground disturbing activities in the event of a discovery; the evaluation and protection of resources encountered; notification protocols; and treatment options in the event avoidance is determined to be infeasible. The Plan shall be developed in coordination with the City and the appropriate Native American tribe and shall also include provisions for permanent curation. A curation agreement shall be executed prior to the issuance of a grading permit.

- **Archaeological and Native American Monitoring.** Prior to the start of any ground-disturbing activity, a qualified archaeological monitor and Native American monitor shall be retained by the City to monitor ground-disturbing activities including, but not limited to, brush clearance and grubbing, grading, trenching, excavation, and the construction of fencing, as specified in the Cultural Resources Monitoring and Mitigation Plan. Archaeological monitoring shall be conducted by a qualified archaeologist familiar with the types of prehistoric resources that could be encountered within the Project, and under direct supervision of the qualified archaeologist.

  The archaeological and Native American monitors shall keep daily logs. After monitoring has been completed, the qualified archaeologist shall prepare a monitoring report that details the results of monitoring, which shall be submitted to the City and to the Northwest Information Center at Sonoma State University.

- **Unanticipated Discovery.** If cultural resources are encountered during the course of ground disturbing activities, the City shall cease any ground disturbing activities within 100 feet of the find until it can be evaluated by the qualified archaeologist. The qualified archaeologist, the archaeological monitor and/or Native American monitor shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of the find until the qualified archaeologist and Native American monitor have evaluated the find, determined whether the find is culturally sensitive, and designed an appropriate short-term and long term treatment plan, following the procedures outlined in the Cultural Resources Mitigation and Monitoring Plan.

ESA appreciates your review of these materials and requests that the U.S. EPA comment on our proposed approach to support your review with the State Historic Preservation Officer.

Sincerely,

Heidi Koenig

Heidi Koenig M.A., RPA

Confidential

GLORIA WAY WELL RETROFIT PROJECT
EAST PALO ALTO, SAN MATEO COUNTY

Final Cultural Resources Survey Report

December 2012

Prepared for the
City of East Palo Alto and
the U.S. Environmental Protection Agency

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Confidential

GLORIA WAY WELL RETROFIT PROJECT
EAST PALO ALTO, SAN MATEO COUNTY

Final Cultural Resources Survey Report

December 2012

Prepared for the

City of East Palo Alto and
the U.S. Environmental Protection Agency

Prepared by
Heidi Koenig M.A., RPA
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San Diego

Seattle

Tampa

Woodland Hills

ESA Project #211859

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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

Environmental Science Associates (ESA) has prepared this Cultural Resources Survey Report (CRSR) for the City of East Palo Alto (City). The CRSR documents the methods and findings of the cultural resources background research and survey conducted for the Gloria Way Well Retrofit Project (Project).

This CRSR has been completed to comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. Because the City is seeking grant funding from the U.S. Environmental Protection Agency (U.S. EPA) and the U.S. Department of Housing and Urban Development, Section 106 consultation with the State Historic Preservation Officer (SHPO) will be completed by the U.S. EPA as federal lead agency.

Background research for the Project was conducted at the Northwest Information Center of the California Historical Resources Inventory System at Sonoma State University in Rohnert Park, California. Two archaeological resources have previously been recorded within the ½-mile records search radius; both are prehistoric burials with associated midden and artifact deposits.

ESA conducted a field survey in the Area of Potential Effects (APE) to identify archaeological resources and historic-period architectural/structural resources. The survey did not identify any potentially significant cultural resources within the Project APE or the immediately adjacent parcels. The APE is in an area mapped as Holocene alluvial deposits. This geologic formation has a very high potential to contain prehistoric archaeological sites buried by natural alluvial processes (Meyer and Rosenthal, 2007). As a result, there is potential for deeply-buried, well-developed soil horizons to occur within the APE, and for archaeological resources associated with those buried soils to be present.

The Project proposes a maximum ground disturbance depth of 3 to 5 feet in previously disturbed areas. Narrow (average 3-foot-wide) and linear ground-disturbance is proposed to connect to the pipeline in Gloria Way, with a maximum depth of 5 feet. Surface observations during the survey indicate previous disturbance associated with well development and utilities installation. As noted above the Project area has the potential for well-developed buried soils, however existing infrastructure prohibits comprehensive access for a subsurface investigation such as exploratory trenching or augering. The existing infrastructure also most certainly disturbed the substrata in the Project area. For this reason, no additional subsurface investigations are recommended at this time.

A separate cover letter recommends precautionary measures, including pre-construction training and archaeological construction monitoring.

TABLE OF CONTENTS

Gloria Way Well Project Cultural Resources Survey Report

Introduction

Environmental Science Associates (ESA) has prepared this Cultural Resources Survey Report (CRSR) for the City of East Palo Alto (City). The CRSR documents the methods and findings of the cultural resources background research and survey conducted for the Gloria Way Well Retrofit Project (Project). The proposed Project consists of retrofitting the existing Gloria Way Well; constructing on-site treatment facilities for iron and manganese removal; and installing a pipeline to connect to the Gloria Way pipeline.

This CRSR has been completed to comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. Because the City is seeking grant funding through the U.S. Environmental Protection Agency (U.S. EPA) and U.S. Department of Housing and Urban Development, Section 106 consultation with the State Historic Preservation Officer (SHPO) will be completed by the U.S. EPA as federal lead agency. Additional environmental analysis of the Project is being completed concurrently to comply with the requirements of the California Environmental Quality Act (CEQA).

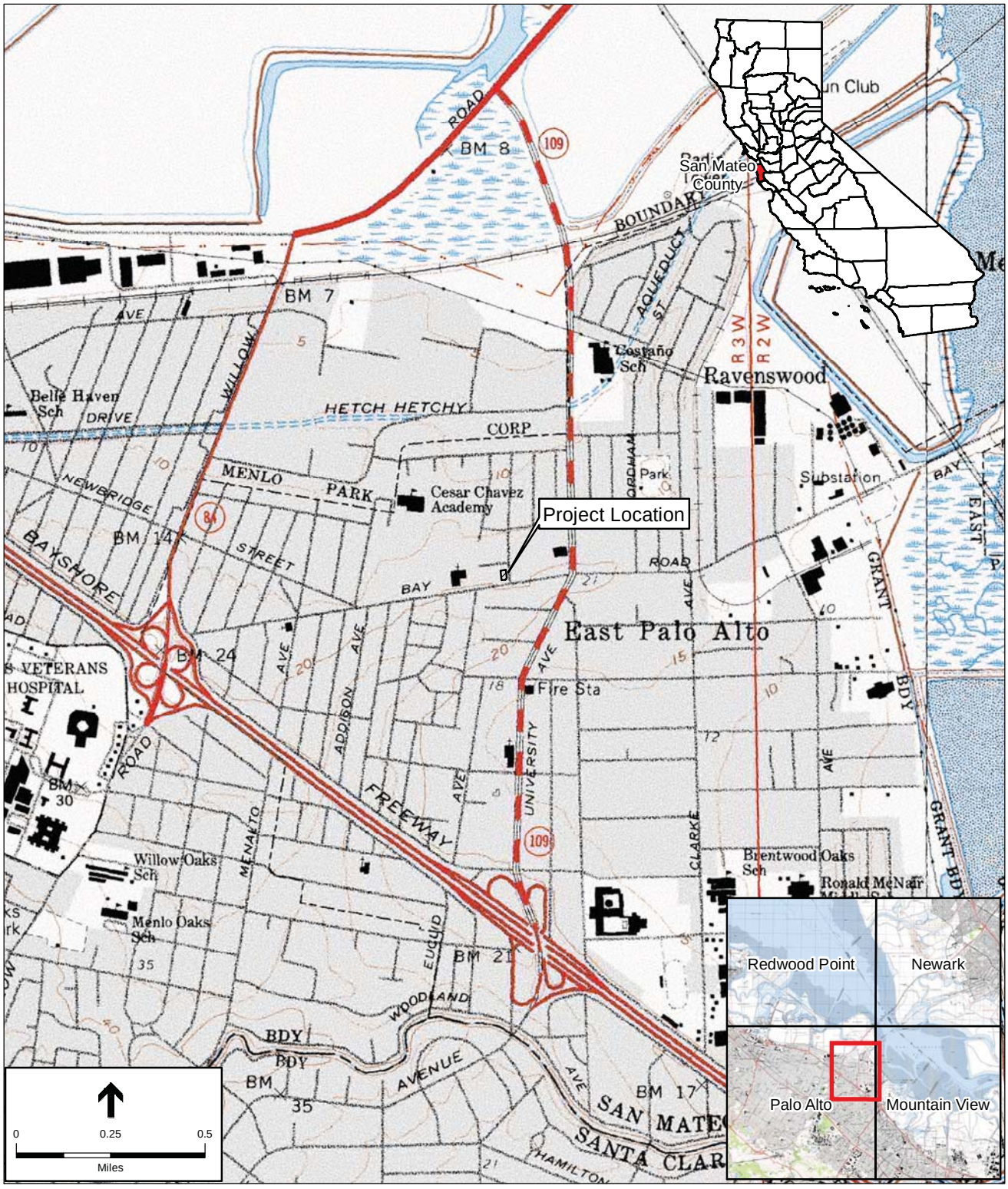
The purpose of this study is to:

- identify historic properties, including prehistoric and historic-period archaeological resources, buildings, structures, and places of importance to Native Americans within the Area of Potential Effects (APE);
- preliminarily evaluate potential historic properties according to the criteria set forth by the National Register of Historic Places (National Register);
- determine whether the proposed Project would have an impact on National Register-listed or eligible historic properties; and
- recommend procedures for avoidance or mitigation of adverse effects to National Register-listed or eligible historic properties.

This report was prepared by ESA Archaeologist Jennifer Bowden completed this report, with review and oversight by Heidi Koenig, M.A., RPA (Registered Professional Archaeologist). Ms. Koenig has conducted archaeological research in California for more than 13 years and meets the Secretary of the Interior's Professional Qualification Standards for archaeologist.

Project Location and Setting

The existing Gloria Way Well is on a small, 0.12-acre parcel on the northwest corner of the intersection of Gloria Way and Bay Road in East Palo Alto (**Figure 1**). All construction and land disturbance activities would take place on this parcel and within the Gloria Way right-of-way adjacent to the site. The surrounding neighborhood is densely developed with a mix of single-family and multi-family residences, City services and offices, and commercial establishments.



Gloria Way Well Project. D211859

Figure 1
Project Location

Project Purpose and Description

East Palo Alto currently receives essentially all of its potable water from the San Francisco Public Utilities Commission (SFPUC) via the Hetch Hetchy Aqueduct. The SFPUC has proposed a reduction in the City's allocation and City water demand is also projected to increase due to planned growth. Without the acquisition of new supply sources, the City projects a shortfall between its future water supply and demand predictions for the next 25 years.

The City recognizes that it faces a water shortage and lack of emergency supply. The nature of the water shortage is threefold. First, the City has been using more water than its dry-year allocation of SFPUC supply. Second, the City lacks supplemental water to serve any proposed new development. Third, the City has no emergency storage facilities to provide water for consumption or fire suppression if the SFPUC system experiences a catastrophic disruption.

The City has obtained a U.S. EPA Special Water Infrastructure grant to fund a two-phased Project. Phase I of this Project has the following objectives:

- In the short term, determine the feasibility of maximizing the production of potable water from the Gloria Way Well parcel. The existing well has water quality issues, but potentially, it could meet about half of the shortfall. In addition, identify options for emergency storage in the City.

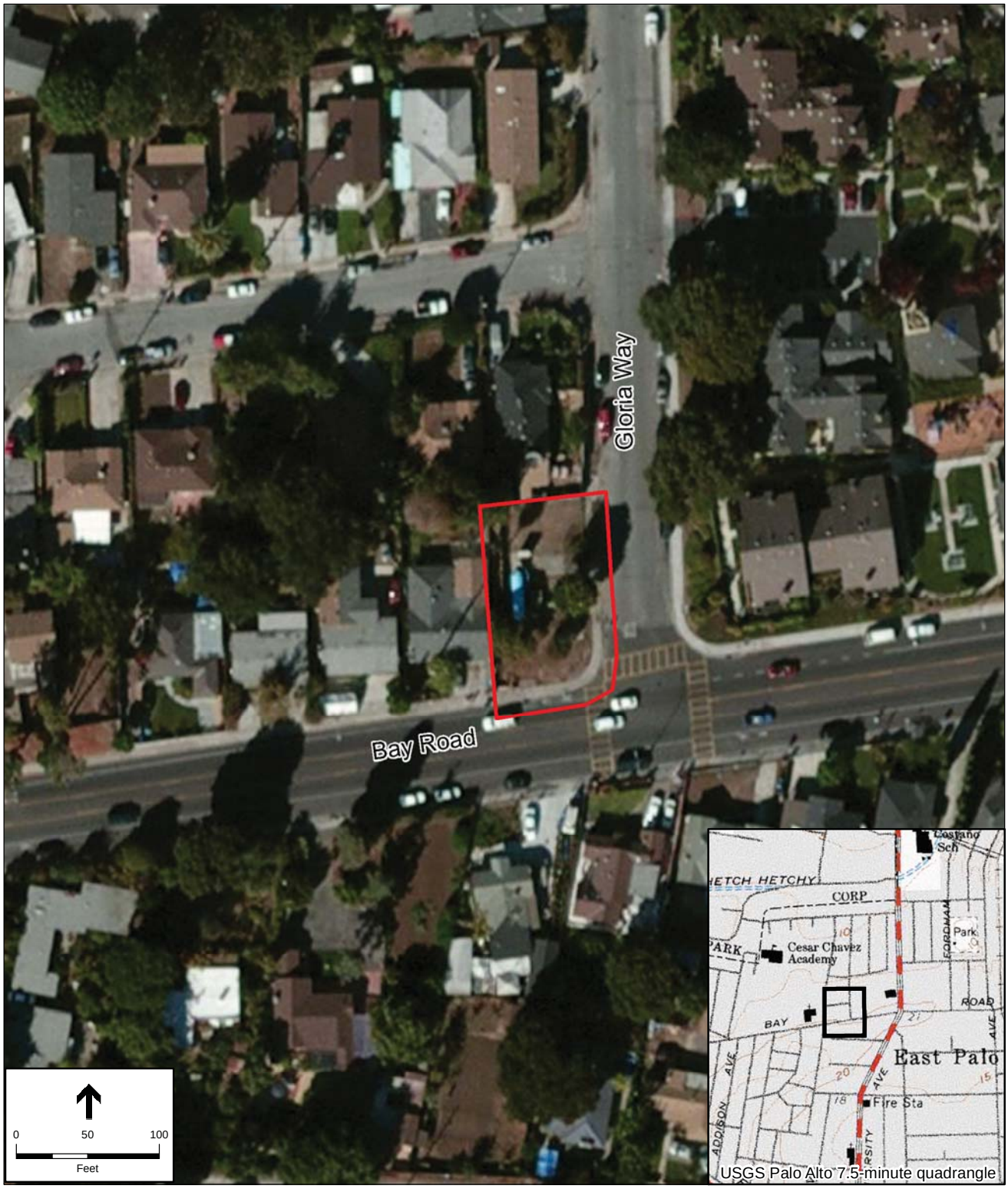
- For the longer term, identify additional groundwater sources and sites, and prepare a groundwater development and management strategy for supplemental and emergency supply.

Phase II will provide construction design documents, environmental review, regulatory permitting, and construction to move ahead with the selected Gloria Way Well or other groundwater development projects. Phase I of the Project has been completed; this CRSR has been prepared to meet the environmental review and permitting requirements of Phase II.

Area of Potential Effects

The APE for the proposed Project is "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" (36 CFR 800.16[b]).

The APE includes all areas of proposed ground-disturbing activity (**Figure 2**). This includes a horizontal APE of the entire 0.12-acre Gloria Way parcel and approximately 200 feet of pipeline alignment, 3-feet-wide, to connect to the pipelines on Bay Road and Gloria Way. Activities within the APE would include: retrofitting the existing Gloria Way Well with new casing and pumps; construction of an on-site treatment facility to remove elevated concentrations of manganese; and installation of a potable water pipeline between the well and the pipeline in Gloria Way. Construction equipment staging for these activities would be located on the well parcel or in paved areas of City property at the intersection of Gloria Way and Bay Road.



Gloria Way Well Project. D211859

Figure 2
Area of Potential Effects

The maximum depth of new ground disturbance within the Gloria Way parcel would be approximately 3 feet below current ground surface except for the two pump stations at 5 feet below ground surface. The trench for the pipeline connection to Gloria Way would also be a maximum of 5 feet deep.

Regulatory Context

National Historic Preservation Act, as amended (1966)

Cultural resources are protected through the NHPA of 1966, as amended (16 U.S.C. 470 et seq.), and it's implementing regulation, Protection of Historic Properties (36 CFR Part 800). Under the NHPA, a cultural resource is considered significant if it meets the Criteria for Evaluation (36 CFR 60) for the National Register of Historic Places (National Register, National Register).

Prior to implementing an "undertaking" (i.e., "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval"), 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 (ACHP) and the State Historic Preservation Officer (SHPO) a reasonable opportunity to comment on any undertaking that would potentially affect properties listed or eligible for listing in the National Register. The lead federal agency is responsible for project compliance with Section 106 of the NHPA.

National Register of Historic Places

The National Register was established by the NHPA of 1966, as "an authoritative guide to be used by federal, state, and local governments, private groups and citizens to identify the Nation's historic resources and to indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). The National Register recognizes both historic and prehistoric properties that are significant at the national, state, and local levels.

To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archaeology, engineering, or culture. As indicated in Section 101(d)(6)(A) of the NHPA, properties of traditional religious and cultural importance to an Indian tribe are eligible for inclusion in the National Register. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (36 CFR 60.4):

(A) Are associated with events that have made a significant contribution to the broad patterns of our history;

(B) Are associated with the lives of persons significant in our past;

(C) 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) Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for National Register listing (36 CFR 60.4).

In addition to meeting the criteria of significance, a property must have integrity, meaning the ability of a property to convey its significance. The National Register recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association (36 CFR 60.4).

Study Methods

Records Search and Literature Review

ESA archaeologist Jennifer Bowden conducted a records search for the Project at the Northwest Information Center (NWIC) of the California Historical Resources Information System on September 6, 2012 (File No. 12-0243). The purpose of the records search was to (1) determine whether known cultural resources have been recorded within or adjacent to the APE; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and evaluation of cultural resources. The records search included an examination of the following documents:

- **NWIC digitized base maps** (USGS Palo Alto 7.5-minute topographic maps), to identify recorded archaeological sites and studies within a ½-mile radius of the APE.

- **NWIC digitized base maps** (USGS Palo Alto 7.5-minute topographic maps), to identify recorded historic-period resources of the built environment (building, structures, and objects) within a ½-mile radius of the APE.

- **Resource Inventories**: *California Inventory of Historical Resources, California Historical Landmarks, Historic Properties Directory Listing by City* (through July 5, 2012)

- **Prehistoric Archaeology:** T.L. Jones and K.A. Klar (2007) *Prehistoric California: Colonization, Culture, and Complexity.* AltaMira Press; N. C. Nelson (1909) *Shellmounds of the San Francisco Bay Region*. University of California Publications in American Archaeology and Ethnology Volume 7, No. 4.

- **Ethnographic Sources:** R. Levy (1978) Costanoan. In *Handbook of North American Indians*, Volume 8, California. Robert F. Heizer, editor. Smithsonian Institution, Washington, D.C.; R. Milliken (1995) *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769-1810.* Ballena Press Anthropological Papers No. 43, Menlo Park.

- **Historic Maps:** An extensive on-line historic map collection with over 300 maps and views of California and the San Francisco Bay Area is available online at http://davidrumsey.com; historic USGS topographic quadrangles were downloaded from the USGS website at http://store.usgs.gov/.

Records Search Results

The records search indicated that 19 cultural resources studies have been completed within a ½-mile radius of the APE (**Table 1**); however, 12 of these reports do not document specific locales within the APE. These 12 reports are either regional overviews, literature searches that resulted in no fieldwork, or Master's theses or other projects that may or may not have included pedestrian field survey within the Project vicinity. Reports marked with an asterisk (*) in Table 1 indicate specific areas for field survey within the records search radius, and only report S-015940 included survey within the portion of the Project APE along the Bay Road right of way.

TABLE 1
CULTURAL RESOURCES STUDIES WITHIN ½-MILE OF THE PROJECT APE

Study No.	Title	Author	Year
S-000848	A Summary of the Knowledge of the Central and Northern California Coastal Zone and Offshore Areas, Vol. III, Socioeconomic Conditions, Chapter 7: Historical and Archaeological Resources	Fredrickson, David A.	1977
S-003023*	A Preliminary Reconnaissance of the Archaeological Resources of the East Palo Alto Redevelopment Project Area	Dotta, James	1974
S-003094*	An Archaeological Reconnaissance of the Park Plaza Lot at the Southeast Corner of Bay and University in East Palo Alto, California (letter report)	Dietz, Stephen A.	1978
S-003146	A Preliminary Inventory of Recorded Archaeological Resources in Pacific Gas & Electric Company's South Bay Study Area, San Francisco Bay, California	King, Thomas F. and Roland Melander	1973
S-003163*	An Archaeological Reconnaissance of the Proposed Dumbarton Bridge Replacement Project (letter report)	Dietz, Stephen A.	1973
S-007483	Revised Data Recovery Plan, Part 1: Review of the Prehistory of the Santa Clara Valley Region as Part of the Guadalupe Corridor Compliance with 36 CFR Part 800	Elsasser, Albert B., R.L. Anastasio, J.C. Bard, C.I. Busby, D. M. Garaventa, S.A. Guedon, E.L. Moore, K.M. Nissen, and M.E. Tannam	1985
S-009462	Identification and Recording of Prehistoric Petroglyphs in Marin and Related Bay Area Counties	Miller, Teresa Ann	1977
S-009580	The Spatial Organization of Human Population on Central California's San Francisco Peninsula at the Spanish Arrival	Milliken, Randall T.	1983
S-009583	Ecology of the Pre-Spanish San Francisco Bay Area	Mayfield, David W.	1978

Study No.	Title	Author	Year
S-015529	California, Oregon, and Washington: Archaeological Resource Study	Gearhart, Robert L., C.L. Bond, S.D. Hoyt, J.H. Cleland, J. Anderson, P. Snethcamp, G. Wesson, J. Neville, K. Marcus, A. York, and J. Wilson	1993
S-015940*	Cultural Resource Evaluation, Bay Road and Gloria Way Residential Development Project, County of San Mateo	Archaeological Resource Management	1993
S-016713*	Cultural Resource Evaluation, Nugent Square Project in East Palo Alto, County of San Mateo	Archaeological Resource Management	1994
S-018217	Cultural Resource Evaluations for the Caltrans District 04 Phase 2 Seismic Retrofit Program, Status Report: April 1996	Gmoser, Glenn	1996
S-026045*	Cultural Resources Reconnaissance Survey and Inventory Report for the Metromedia Fiberoptic Cable Project, San Francisco Bay Area and Los Angeles Basin Networks	Carrico, Richard, Theodore Cooley, and William Eckhardt	2000
S-031461*	Cultural Resource Evaluation of the Bay Road Housing Project in East Palo Alto	Archaeological Resource Management	2004
S-032596	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	Milliken, Randall, Jerome King, and Patricia Mikkelsen	2005
S-033600	Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4	Meyer, Jack and Jeff Rosenthal	2007
S-038063	Smart Corridors Geoarchaeological Sensitivity Research (letter report)	Kaptain, Neal	2009
S-038684	A Cultural Resources Study for the San Mateo County SMART Corridors Project, San Mateo County, California	Kozakavich, Stacy, and Alexandra Merritt-Smith	2008

Source: NWIC, 2012

Two cultural resources (CA-SMA-262 and CA-SMA-267) have been previously recorded within the ½-mile records search radius. Both of these are prehistoric archaeological sites that include human burials, midden deposits, and artifact concentrations (**Table 2**). Both sites were identified at depths below the ground surface (CA-SMA-262 at 40-45 cm and CA-SMA-267 at 120 cm).

TABLE 2
DOCUMENTED CULTURAL RESOURCES WITHIN ½-MILE OF THE PROJECT AREA

Primary	Trinomial	Description	National Register Status	Distance from APE
P-41-000258	CA-SMA-262	Single burial found in ashy gray midden matrix at depth of 40-45cm below surface; shell pendants and a bead, baked clay object and ground stone fragment in association	Not Determined; likely eligible	1,500 feet (450 m) south
P-41-000263	CA-SMA-267	Single burial found in dark brown shell midden matrix at depth of 120 cm below surface; few red chert/jasper flakes and unworked shell found in association	Not Determined; likely eligible	500 feet (150 m) west

Source: NWIC, 2012

Neither of the two sites was subjected to a complete scientific excavation. Although the burial associated with CA-SMA-262 was encountered in 1959 during an excavation in the front yard of a house on Glen Way, a site record form was not completed until 1985. At that time, pockets of dark, friable midden soil were visible along a road cut and a former channel of San Francisquito Creek. The human remains collected in 1959 were curated at Stanford University.

CA-SMA-267 was encountered in 1986 during trenching for placement of a sewer line. The burial, although badly disturbed by the backhoe, was excavated by researchers from San Jose State University, and the collected remains were transferred to a local Ohlone group for reburial. Because both sites were found in buried contexts in an already-developed area, no attempt has been made to determine the horizontal or vertical extent of either site, although based on typical midden sites in the vicinity, it is estimated that cultural materials likely extend under several adjacent houses in both locations.

Organizational Contacts

ESA submitted a sacred lands search request to the Native American Heritage Commission (NAHC) on September 18, 2012. A response from the NAHC was received via letter dated September 25, 2012. A records search of their sacred land file failed to indicate the presence of Native American cultural resources in the immediate vicinity of the APE. The NAHC also provided a list of Native American individuals and organizations who might have additional information or concerns. As part of the Section 106 process, letters to these individuals will be sent directly from the federal lead agency (EPA) to initiate government-to-government consultation. Appendix B provides the NAHC correspondence.

Background Context

Natural Environment

East Palo Alto is in the Coast Range Physiographic Province, a region characterized by northwest-trending faults, mountain ranges, and valleys. Movement along the San Andreas, Hayward, and Calaveras faults and down-warping of the area in between the fault zones has formed the physiography of the San Francisco Bay Area (DWR, 1967).

The City is in the South Bay Drainage Unit, which is characterized by a broad alluvial valley sloping toward the San Francisco Bay and flanked by the Diablo Range in the East Bay and the Santa Cruz Mountains in the west (DWR, 1967). Surface streams have flowed out from the mountains and deposited debris as alluvial fans and floodplains. These alluvial deposits comprise the major aquifers of the region.

East Palo Alto is on the southwestern shore of the southern extremity of San Francisco Bay, with salt ponds and tidal marshes marking the edge of the Bay less than one mile to the north and east of the Project location. Until the twentieth century, these marshes were much more extensive, and would have provided prehistoric inhabitants with a variety of plant and animal resources for food, medicine, and building and craft materials. The current vegetation in the Project vicinity is typical of an urban landscape, with lawns and ornamental flowers, shrubs, and trees.

Soils in the Project area and surrounding vicinity are classified as Urban Land, including engineered and reworked native soils and imported fill (NRCS, 2012). Underlying formations are thick estuarine Bay Mud and Quaternary alluvial deposits (Witter et al, 2006). The Gloria Way well taps an aquifer in the San Francisquito Creek alluvial cone, composed of unconsolidated and semi-consolidated medium-grained alluvial sediments carried down from the Santa Cruz Mountains (Todd Engineers, 2012). The elevation is approximately 22 feet above mean sea level (asml), with a gentle northeast slope toward the Bay.

Up until the 1960s, groundwater was the primary water source for East Palo Alto and other nearby communities. Groundwater pumping during this period caused groundwater levels to drop below sea level. In turn, lowered water levels caused land subsidence and saltwater intrusion from the San Francisco Bay (Fio and Leighton, 1995). By the early to mid-1960s, surface water from the Hetch Hetchy Aqueduct became the dominant source of water for the area. While groundwater still provides a portion of the water supply for the City and surrounding communities, groundwater levels have been rising since the mid 1960s and are now at levels comparable to those of the early 1900s (Carollo, 2003).

Geoarchaeological Context

The California coast has undergone dramatic landscape changes since humans began to inhabit the region more than 10,000 years ago. Rising sea levels and increased sedimentation into streams and rivers are among some of the changes (Helley and Graymer, 1979). In many places, the interface between older land surfaces and Holocene-age landforms are marked by a well-developed buried soil profile, or a paleosol. Paleosols preserve the composition and character of the earth's surface prior to subsequent sediment deposition; thus, paleosols have the potential to preserve archeological resources if the area was occupied or settled by humans (Meyer and Rosenthal, 2007). Because human populations have grown since the arrival of the area's first inhabitants, younger paleosols (late Holocene) are more likely to yield archeological resources than older paleosols (early Holocene or Pleistocene).

The Project APE is in an area mapped as Holocene alluvial deposits. As evidenced by other buried sites in the vicinity, this geologic formation has a very high potential to contain archaeological sites buried by natural alluvial processes (Meyer and Rosenthal, 2007).

Prehistory

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. Milliken et al. (2007) suggest a framework for the interpretation of the San Francisco Bay Area. That research divides human history in California into three broad periods: the Early Period, the Middle Period, and the Late Period. Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods.

The *Paleoindian Period* (13,500 to 10,000 before present [B.P.]) was characterized by big-game hunters occupying broad geographic areas. Evidence of human habitation during the *Paleoindian Period* has not yet been discovered in the San Francisco Bay Area. During the *Lower Archaic* of the *Early Period* (10,000 to 5500 B.P.), geographic mobility continued and is characterized by the millingslab and handstone as well as large wide-stemmed and leaf-shaped projectile points. The first cut shell beads and the mortar and pestle are documented in burials during the *Middle Archaic* of the *Early Period* (5500 to 2500 B.P.), indicating the beginning of a shift to sedentism. During the *Middle Period*, which includes the *Lower Middle Period* (*Initial Upper Archaic*; 2500 to 1570 B.P.), and *Upper Middle Period* (*Late Upper Archaic*; 1570 to 950 B.P.), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The first rich black middens are recorded from this period. The addition of milling tools, obsidian and chert concave-base projectile points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse. By the *Upper Middle Period*, mobility was being replaced by the development of numerous small villages. Around 1570 B.P. a "dramatic cultural disruption" occurred evidenced by the sudden collapse of the *Olivella* saucer bead trade network. During the *Initial Late Period* (*Lower Emergent*; 950 to 450 B.P.), social complexity developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments.

Ethnography

Based on a compilation of ethnographic, historic, and archaeological data, Milliken (1995) describes a group known as the Ohlone, who once occupied the general vicinity of the Project area. While traditional anthropological literature portrayed the Ohlone peoples as having a static culture, today it is better understood that many variations of culture and ideology existed within and between villages. While these "static" descriptions of separations between native cultures of California make it an easier task for ethnographers to describe past behaviors, this masks Native adaptability and self-identity. California's Native Americans never saw themselves as members of larger "cultural groups," as described by anthropologists. Instead, they saw themselves as members of specific villages, perhaps related to others by marriage or kinship ties, but viewing the village as the primary identifier of their origins.

Levy (1978) describes the language group spoken by the Ohlone, known as "Costanoan." This term is originally derived from a Spanish word designating the coastal peoples of Central California. Today Costanoan is used as a linguistic term that references to a larger language family spoken by distinct sociopolitical groups that spoke at least eight languages (as different as Spanish is from French) of the same Penutian language group. The Ohlone once occupied a large territory from San Francisco Bay in the north to the Big Sur and Salinas Rivers in the south. The Project area is in the greater *Puichon* tribal area (Milliken, 1995). At least one *Puichon* village, *Ssipùtca*, was located along San Francisquito Creek.

Economically, Ohlone 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, and rabbit and

other small mammals. The Ohlone 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, Ohlone society was severely disrupted by missionization, disease, and displacement. Today, the Ohlone still have a strong presence in the San Francisco Bay Area, and are highly interested in their historic and prehistoric past.

History

The Portola expedition made the initial historic contact with the native Ohlone Indians in the San Mateo County area while in search of Monterey Bay in 1769. Mission Santa Clara de Asís was established along Guadalupe Creek in 1777, and the Spanish ruled the area until 1821 when the Mexican Revolution ushered in the period of Mexican rule. The area of East Palo Alto was part of the Rancho de las Pulgas, a 35,000-acre ranch granted to José Darío Argüello in 1795. Following the end of the Mexican-American War in 1848, California was admitted to the Union in 1850. San Mateo County was was formed from parts of San Francisco County and Santa Cruz County in 1856. During the latter half of the 19th century, the County was focused on ranching, transportation and shipping, brick manufacturing, and farming. Flower and greenhouses became a major industry and remained so into the 1940s and 1950s (East Palo Alto, 2012). Influxes of settlers, from the Dust Bowl migrants of the 1930s to post-World War II military veterans and more recently entrepreneurs and technical companies, have gradually urbanized the area.

Field Methods and Summary

ESA archaeologist Jennifer Bowden surveyed the Project APE on September 20, 2012, examining all areas of open ground surface. Existing buildings and structures within the APE and surrounding parcels were also examined to determine if any of these resources meet the minimum age threshold (50 years) for listing in the National Register. Because of the small area of the APE, formal survey transects were not used. Ms. Bowden walked the boundaries of the Gloria Way Well parcel and areas within to examine all areas of exposed ground surface. Surface visibility within the Gloria Way parcel was approximately 75%. Ms. Bowden took photographs of these areas and the adjacent buildings (**Figure 3** and **Figure 4**).

No cultural resources or other evidence of past human use and occupation was identified within the Project APE. None of the adjacent buildings appear to meet the minimum age threshold for listing in the National Register. No potential historic properties were identified as a result of the survey effort.

Figure 3. Current facilities in APE

Figure 4. View of exposed ground surface in APE, looking east

Study Findings and Recommendations

Architectural and Structural Resources

No architectural or structural resources potentially eligible for listing in the National Register, including buildings, structures, objects, or districts, were identified in or immediately adjacent to the Gloria Way Well APE. No additional work is recommended regarding built-environment resources.

Archaeological Resources

No archaeological resources or other evidence of past human use or occupation were identified in the APE during the surface survey effort.

The APE is in an area mapped as Holocene alluvial deposits. This geologic formation has a very high potential to contain prehistoric archaeological sites buried by natural alluvial processes (Meyer and Rosenthal, 2007). Two buried sites with human remains have been previously identified within a ½-mile radius of the Project APE. Based on the geoarchaeological assessment there is potential for deeply-buried, well-developed soil horizons to be in the APE, and therefore potential for archaeological resources associated with those buried soils.

The Project proposes a maximum ground disturbance depth of 3 to 5 feet in previously disturbed areas. Narrow (average 3-foot-wide) and linear ground-disturbance is proposed to connect to the pipeline in Gloria Way, with a maximum depth of 5 feet. Surface observations during the survey indicate previous disturbance associated with well development and utilities installation. As noted above the Project area has the potential for well-developed buried soils, however existing infrastructure prohibits comprehensive access for a subsurface investigation such as exploratory trenching or augering. The existing infrastructure also most certainly disturbed the substrata in the Project area. For this reason, no additional subsurface investigations are recommended at this time.

A separate cover letter recommends precautionary measures, including pre-construction training and archaeological construction monitoring.

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NATIVE AMERICAN HERITAGE COMMISSION CORRESPONDENCE

Additional Information

California Native Americans
Cultural Resources
Strategic Plan
Commissioners
Federal Laws and Codes
State Laws and Codes
Local Ordinances and Codes
Additional Information

Return to CNAHC Home Page

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
915 Capitol Mall, RM 364
Sacramento, CA 95814
(916) 653-4082
(916) 657-5390 – Fax
nahc@pacbell.net

Information Below is Required for a Sacred Lands File Search

Project: Gloria Way Well Project (D21185a.01)

County San Mateo

USGS Quadrangle

Name Palo Alto 7.5'

Township 5S Range 3W Section(s) unsectioned Pulgas Rancho

Company/Firm/Agency: ESA

Contact Person: Jennifer Bowden

Street Address: ~~550~~ 550 Kearny St., Suite 800 ~~X~~ ← New address!!

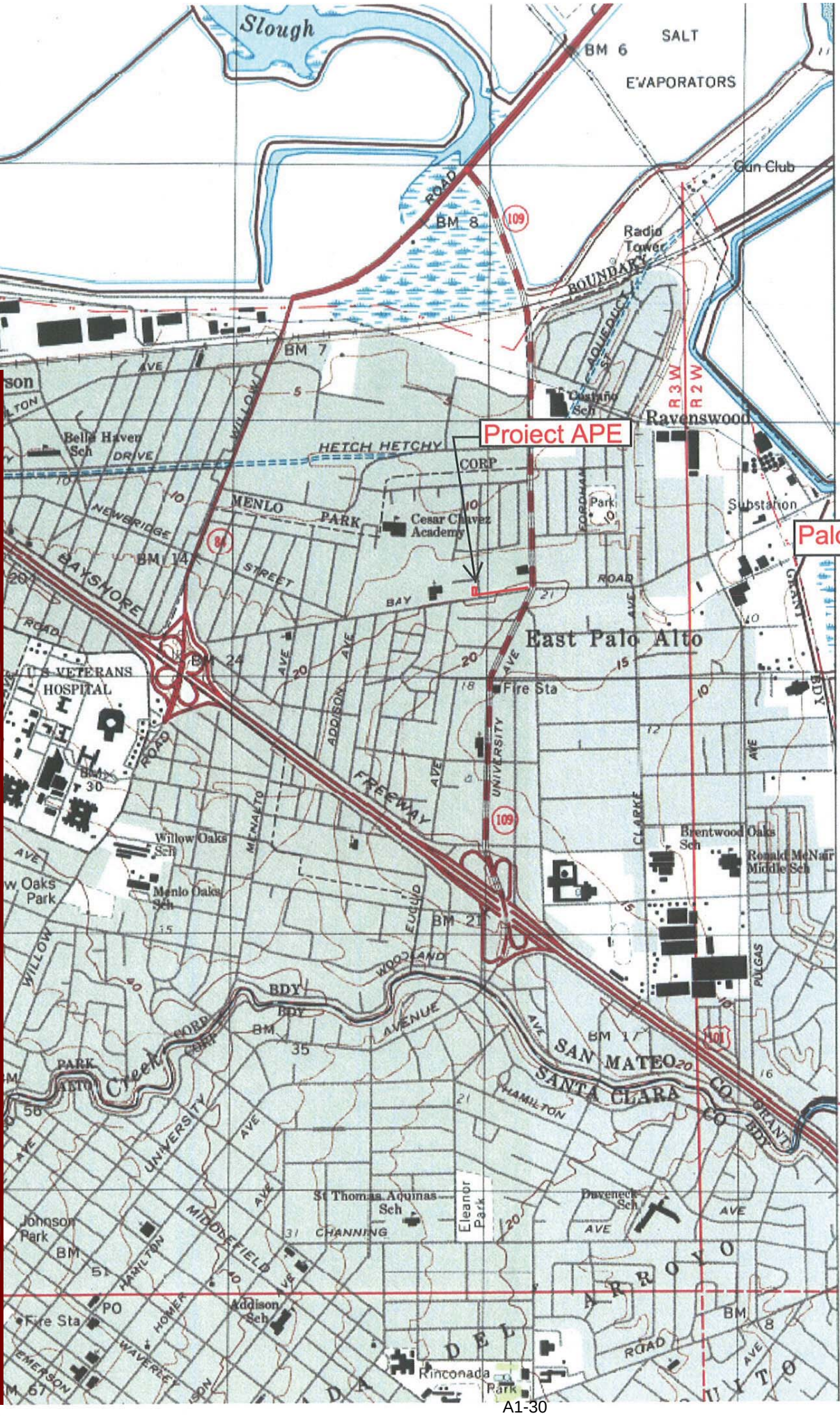
City: San Francisco Zip: 94108

Phone: (415) 896-5900

Fax: (415) 896-0332

Email: jbowden@esassoc.com

Project Description: Project includes retrofitting of existing well, construction of on-site treatment facilities, and installation of pipelines to convey water between the well and existing SFPUC turnout on University Avenue near City Hall.



STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390

September 25, 2012

Jennifer Bowden
ESA
550 Kearny St. Suite 800
San Francisco, CA 94108

Sent by Fax: 415-896-0332
Number of Pages: 2

Re: Gloria Way Well Project, San Mateo County

Dear Ms. Bowden:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file 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.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. 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 or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4038.

Sincerely,

Debbie Pilas-Treadway
Environmental Specialist III

Native American Contacts
San Mateo County
September 23, 2012

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Ohlone/Costanoan

Muwekma Ohlone Indian Tribe of the SF Bay Area
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Ohlone / Costanoan

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Ohlone/Costanoan

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Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

Amah/MutsunTribal Band
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Ohlone/Costanoan

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Ohlone/Costanoan
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Plains Miwok
Patwin

Coastanoan Rumsen Carmel Tribe
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Ohlone/Costanoan

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
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Hollister , CA 95024
ams@indiancanyon.org
831-637-4238
Ohlone/Costanoan

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 Resources Code and Section 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Gloria Way Well project, San Mateo County

APPENDIX 2

Biological Site Assessment

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ESA Biological Resources

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Oakland, CA 94612
510.839.5066 phone
510.839.5825 fax

www.esassoc.com

December 28, 2012

Cheryl A. McGovern
Environmental Protection Specialist
U.S. Environmental Protection Agency
75 Hawthorne Street (WTR-4)
San Francisco, California 94105

Subject: East Palo Alto Gloria Way Well Retrofit Project – Biological Site Assessment for Compliance with Federal Endangered Species Act Section 7 Consultation Requirements

Dear Mrs. McGovern:

The U.S. EPA awarded the City of East Palo Alto Special Appropriations Act Project (SAAP) grant[1] funding for planning and preliminary design of the Gloria Way Well Retrofit project (Project), and the City plans to apply for a grant amendment to cover final design and construction. Before awarding grant funding for project construction,[2] the U.S. EPA is required to conduct environmental review of the Project in accordance with the National Environmental Protection Act (NEPA) (40 C.F.R. Part 6). The City has also been awarded a Community Development Block Grant from the U.S. Department of Housing and Urban Development (HUD) and is using this grant to prepare a Joint Environmental Assessment/Mitigated Negative Declaration in accordance with both California Environmental Quality Act (CEQA) and NEPA environmental review requirements.

Projects receiving federal funding must coordinate with federal agencies responsible for managing the resources that could be affected by the projects. In cases where a project would not affect a particular resource, the process used to determine the applicable authorities must be documented. This letter summarizes ESA's assessment of biological conditions at the East Palo Alto Gloria Way Well Retrofit Project site located at 1531 Bay Road at Gloria Way in East Palo Alto (City), California (see **Figure 1**). This letter memorandum summarizes the results of a biological reconnaissance survey, provides a list of special-status species obtained from the U.S. Fish and Wildlife Service (USFWS) for the project area, and provides a conclusion regarding the potential for Project implementation to affect federally listed species and/or designated critical habitats. This memorandum is intended to provide the U.S. EPA with the necessary information to fulfill the Federal Endangered Species Act (FESA) Section 7 Consultation requirements and make a determination of no effect.

Environmental Science Associates (ESA) conducted a biological site assessment for the proposed Project and determined that there is no suitable habitat for endangered or threatened plant and animal species within the project site and adjacent properties. The 0.12-acre project site is currently developed and includes a municipal groundwater production well and auxiliary infrastructure. The site is surrounded by dense urban development, including single-family residential, multi-family residential, and commercial land uses. Furthermore, the site is

1 Also referred to as STAG grants because they are contained in the State and Tribal Assistance Grants section.

2 SAAP grant funding for preliminary project design and planning are not subject to NEPA.

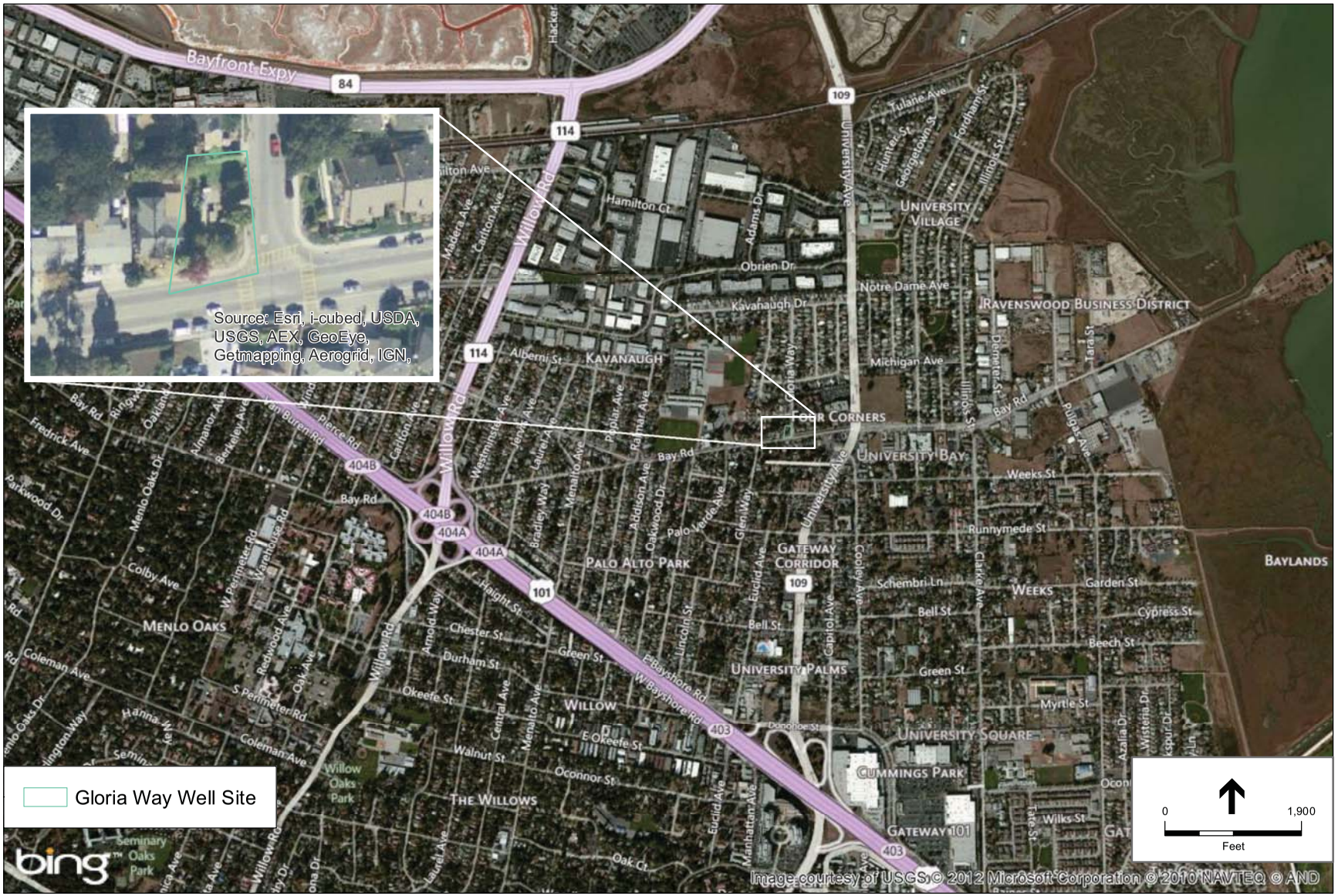
separated from any existing habitat for FESA species by urban land uses and development. Thus, ESA recommends that the U.S. EPA make a finding of no effect and waive FESA Section 7 formal consultation.

The City proposes to rehabilitate an existing City-owned groundwater production well—the Gloria Way Well—located at the northwestern corner of Bay Road and Gloria Way. Due to elevated levels of iron and manganese in the groundwater, use of the Gloria Way Well is currently limited to non-potable uses. As part of the proposed Project, the City would address these water quality concerns by constructing an on-site treatment system, and reintroduce groundwater from the Gloria Way Well into the water distribution system to assist the City in meeting near-term and long-term water supply deficits. Implementation of the Project would enable the City to secure supplemental potable water supplies from sources independent of the City's current water supply allocation from the San Francisco Public Utility District's (SFPUC) in order to address near-term supply deficits, support future growth and economic development, and provide a backup potable water supply to be used in the event of an emergency.

Project Description

The Gloria Way Well site is 0.12-acre parcel owned by the City. Existing facilities include the production well, a well pump, a pressure tank, an oil-filled electrical transformer, and various pipes and valves (see **Figure 2**). With the exception of the production well, well pump, and an electrical transformer, all existing structures would be removed during project construction. Approximately 200 linear feet of 8-inch-diameter pipe requiring excavations of up to 5 feet in depth would connect the proposed facilities to the existing distribution system along Gloria Way and Bay Road. All other proposed improvements would be constructed aboveground. The proposed aboveground improvements include: installation of two pressure filters for manganese removal; a mixing tank for blending groundwater with the SFPUC supplies prior to conveyance with the City distribution system; a backwash tank for effluent associated with routine filter flushing; two 30 gpm, 1-hp decant pumps for decanting reusable backwash effluent into the system, which would be enclosed in a 10-foot by 10-foot concrete building; two 600 gpm, 50-hp finished water pumps to pump water from the mixing tank into the distribution system, which would be enclosed in a 15-foot by 15-foot concrete building; a single-story 44-foot by 22-foot concrete masonry building to house electrical controls and treatment chemical; and an emergency backup generator to provide backup power supplies in the event of a power outage. With the exception of pipe and the two concrete pump buildings which would require excavations of up to 5 feet, all other improvements would involve excavations of 3 feet or less.

All project construction and materials and equipment staging would occur within the 0.12-acre existing Gloria Way Well site and immediately adjacent road right-of-ways along Gloria Way and Bay Road. Project construction is estimated to occur over a 12-month period and commence in 2014.



East Palo Alto Gloria Way Well Retrofit Project . 211859.02

SOURCE:ESRI, 2012; ESA, 2012

Figure 1

East Palo Alto Gloria Way Well Retrofit Project Location
East Palo Alto, San Mateo County, California

Regulatory Background

Federal Endangered Species Act

According to FESA, the United States Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) have regulatory authority over federally listed species. Under FESA, a permit is required to "take" a listed species for any action that may harm a member of that species. The term "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" under Section 9 of FESA.

Under federal regulation, "take" further encompasses habitat modification or deprivation where it would be anticipated to result in death or injury to listed wildlife by significantly inhibiting critical behavioral patterns, including breeding, feeding, or sheltering. If a project would result in the take of a federally listed species, the project proponent must obtain either an incidental-take permit, under Section 10(a) of FESA, or a federal interagency consultation, under Section 7 of FESA prior to the take.

Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 U.S.C., Sec. 703, Supp. I 1989), prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

Project Setting

The project site is located within a highly urbanized area of East Palo Alto within San Mateo County and in the San Francisco Bay Area. Land uses surrounding the project site are largely residential and commercial, acting as a dense urban barrier to any special status species that could be present in the nearest open space habitat, which is located one mile away and is comprised coastal salt marshes and annual grasslands along San Francisco Bay (north and east of the project site; see **Figure 1**). The project site is minimally landscaped with two mature privet trees *(Ligustrum* sp.), three mature oleander bushes (*Nerium oleander*), and ground cover including petty spurge (*Euphorbia peplus*), filaree (*Erodium cicutarium*), storksbill (*Geranium molle*), cheeses (*Malva parviflora*), and unidentified non-native annual grass on the lot where concrete pads supporting existing pump structures end. A chain link fence encloses the existing waters supply infrastructure but does not currently extend to the parcel boundaries. Neighboring residences have native and non-native landscaping which likely supports common urban wildlife. One privet tree (with multiple trunks measuring 15.5" and 10.5" dbh) and all three oleander bushes existing on the project site are located outside of the existing chain link fence but within the area of impact (see **Figure 2**). It is assumed that all existing vegetation, including the tree and bushes, could require removal during project construction. The privet tree is protected under the City's Tree Ordinance (Municipal Code Section 6420.3) based its size; however, because the Project is proposed by the City and the project site is City-owned property, implementation of the proposed Project would not require a tree removal permit or mitigation plantings (Municipal Code Section 6420.4).

Figure 2: Gloria Way Well Site

Methodology

ESA accessed the USFWS Pacific Southwest Region, Sacramento Fish and Wildlife Office online database on December 12, 2012 to obtain a list of federally threatened and endangered species in the four USGS quadrangles (Palo Alto – 428A, Mountain View – 428B, Redwood Point – 447C, Newark – 447D) closest to the project site. The species list documents 21 threatened or endangered wildlife species, 6 threatened or endangered plant species, and 4 designated critical habitats within the vicinity of the project site (see **Attachment 1**). However, as described above, the 0.12-acre project site is developed with existing water supply structures and infrastructure, and is located within a dense urban area that includes residential and commercial land uses, which separate the Project site from areas with quality habitat value.

Of the 27 threatened and endangered wildlife and plant species listed in the project vicinity, none are expected to occur on the project site. Three species (salt marsh harvest mouse [*Reithrodontomys raviventris*], California clapper rail [*Rallus longirostris obsoletus*], and California sea blite [*Suaeda californica*]) are associated with salt marsh habitat found at the margin of the San Francisco Bay and ten species (western snowy plover [*Charadrius alexandrines nivosus*], California brown pelican [*Pelecanus occidentalis californicus*], California least tern [*Sternula antillarum browni*], green sturgeon [*Acipenser medirostris*], delta smelt [*Hypomesus transpacificus*], coho salmon [*Oncorhynchus kisutch*], Central California Coastal steelhead and Central Valley steelhead

[*Oncorhynchus mykiss*], and Central Valley spring-run and winter-run Chinook salmon [*Oncorhynchus tshawytscha*]) are associated with the Bay shoreline and adjoining aquatic habitat which is over one mile away through urban streetscape. Neither of these habitats have any connectivity to the project site.

The remaining 14 listed wildlife and plant species in the project vicinity (Alameda whipsnake [*Masticophis lateralis euryxanthus*], San Francisco garter snake [*Thamnpphis sirtalis tetrataenia*], bay checkerspot butterfly [*Euphydryas editha bayensis*], California tiger salamander [*Ambystoma californiense*], California red-legged frog [*Rana draytonii*], vernal pool fairy shrimp [*Branchinects lynchi*], vernal pool tadpole shrimp [*Lepidurus packardi*], marbled murrelet [*Brachyramphus*], San Mateo thorn mint [*Acanthomintha duttonii*], fountain thistle [*Cirsium fontinale var. fontinale*], Marin dwarf-flax [*Hesperolinon congestum*]), Contra Costa goldfields [*Lasthenia conjugens*], California sea blite [*Suaeda californica*], and showy Indian clover [*Trifolium amoenum*]) are associated with annual grasslands, valley oak woodlands, vernal pools, freshwater aquatic and wetlands, and mature old growth forests, none of which exist onsite or are located within 0.5 miles of the project site. Four species with designated critical habitats documented in the project vicinity include the bay checkerspot butterfly, Central California coastal steelhead, California red-legged frog, and Alameda whipsnake, however this habitat is not documented within five miles of the project site.

ESA accessed the USFWS National Wetlands Inventory database on December 14, 2012 to determine if any wetland or riparian habitats have been documented in the project vicinity. The results of the database search revealed that neither of these habitats has been documented within 0.5 mile of the project site (see **Attachment 2**).

ESA conducted a biological reconnaissance survey of the project site and immediately adjacent properties on December 7, 2012 and did not observe any special-status wildlife or plant species nor associated habitat. Wildlife observed onsite during the reconnaissance survey was limited to avian species common to residential and landscaped settings, including western scrub jay (*Aphelocoma california*), Anna's hummingbird (*Calypte anna*), house finch (*Carpodacus mexicanus*), rock pigeon (*Columba livia*), European starling (*Sturnus vulgaris*), American crow (*Corvus brachyrhynchos*), chestnut backed chickadee (*Poecile rufescens*), and various gull species flying over the site, and perching and foraging in mature trees along Gloria Way and neighboring parcels.

Conclusion

Based on the December 7, 2012 reconnaissance survey, the USFWS species list and wetlands inventory database, GIS mapping resources,[3] and online wildlife and plant species databases,[4] implementation of the proposed Project would have no affect on FESA-listed species or their designated critical habitat. Therefore, formal consultation under Section 7of the FESA is not applicable to the Project.

[3] ESRI, 2012
[4] CNDDB, December 2012; CalFlora, December 2012

Should Project construction (including tree and vegetation removal) occur during raptor and passerine nesting bird season, cautiously interpreted by the California Department of Fish and Game (CDFG) as the period between February 1 and August 31, ESA recommends that a qualified biologist perform pre-construction nesting bird surveys of mature trees and large shrubs within the project site, and trees and shrubs within 250 feet of the project site. The pre-construction surveys should confirm presence or absence of any nesting birds no more than 14 days prior to construction activities. If active nests are observed, buffer zones will be established around trees/shrubs/structures with nests, with a buffer size established by the qualified biologist through consultation with the appropriate regulatory agency (e.g., CDFG). Buffered zones shall be avoided during construction activities until young have fledged or the nest is otherwise abandoned. Should construction activity lapse for more than 14 days during the nesting season, ESA recommends that the pre-construction surveys be repeated. Although conservative, these measures would ensure compliance with the Federal Migratory Bird Treaty Act.

Please contact me at 510-839-5066 or by email at RDanielson@esassoc.com regarding the findings of this assessment.

Sincerely,

Rachel Danielson
Environmental Science Associates

Attachment 1 – USFWS, Sacramento Fish and Wildlife Office, Federal Threatened and Endangered Species List, December 12, 2012.

Attachment 2 – USFWS National Wetlands Inventory – Gloria Way Well Retrofit Project, December 14, 2012.

U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 121212050926

Database Last Updated: September 18, 2011

Quad Lists

Listed Species

Invertebrates

Branchinecta lynchi
vernal pool fairy shrimp (T)

Euphydryas editha bayensis
bay checkerspot butterfly (T)
Critical habitat, bay checkerspot butterfly (X)

Lepidurus packardi
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
delta smelt (T)

Oncorhynchus kisutch
coho salmon - central CA coast (E) (NMFS)

Oncorhynchus mykiss
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)

Rana draytonii
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

Masticophis lateralis euryxanthus
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

Thamnophis sirtalis tetrataenia
San Francisco garter snake (E)

Birds

Brachyramphus marmoratus
marbled murrelet (T)

Charadrius alexandrinus nivosus

western snowy plover (T)

Pelecanus occidentalis californicus
California brown pelican (E)

Rallus longirostris obsoletus
California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni
California least tern (E)

Mammals

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Plants

Acanthomintha duttonii
San Mateo thornmint (E)

Cirsium fontinale var. fontinale
fountain thistle (E)

Hesperolinon congestum
Marin dwarf-flax (=western flax) (T)

Lasthenia conjugens
Contra Costa goldfields (E)

Suaeda californica
California sea blite (E)

Trifolium amoenum
showy Indian clover (E)

Quads Containing Listed, Proposed or Candidate Species:

MOUNTAIN VIEW (428A)

PALO ALTO (428B)

REDWOOD POINT (447C)

NEWARK (447D)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, or may be affected by projects

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are

  likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be March 12, 2013.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

December 12, 2012

Document Number: 121212050926

Cheryl A. McGovern
U.S. Environmental Protection Agency
75 Hawthorne Street (WTR-4)
San Francisco, CA 94105

Subject: Species List for East Palo Alto Gloria Way Well Retrofit Project

Dear: Mrs. McGovern

We are sending this official species list in response to your December 12, 2012 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be March 12, 2013.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found here.

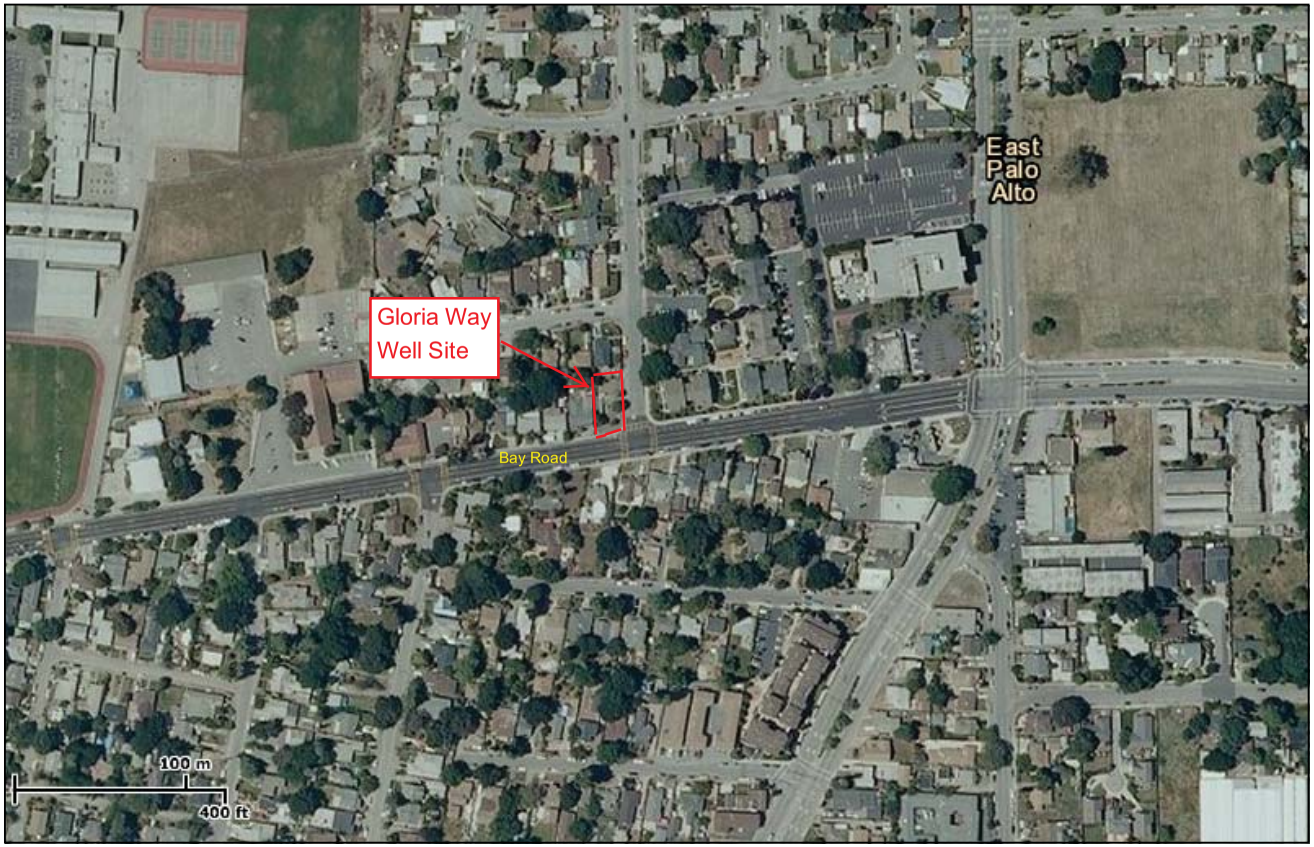
Endangered Species Division

U.S. Fish and Wildlife Service

National Wetlands Inventory

Gloria Way Well Retrofit Project

Dec 14, 2012



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Riparian

- Herbaceous
- Forested/Shrub

User Remarks:

****No wetlands or riparian habitats have been mapped in the vicinity of the project site.**