Arborist Report

Prepared For: Shakil Ali and Numair Ali
Property Address: 4301 Appian Way, El Sobrante, CA 94803
Date of Inspection: Friday, October 24th, 2025
Arborist: Aaron Sunshine, ISA Certified Arborist # WE-12959A
Purpose of Report: Tree inventory and map of property, including species, location, measurements, condition, and recommendations based on planned development of the site. This report is not a formal tree risk assessment.

Executive Summary:

This report details the inspection findings for 8 mature trees and 4 stumps located on the subject property: one deodar cedar (*Cedrus deodara*), three Douglas firs (*Pseudotsuga menziesii*), one citron (*Citrus medica*), one tree privet (*Ligustrum lucidum*), one common pear (*Pyrus communis*), one common fig (*Ficus carica*), two olives (*Olea europaea*), and two Northern California black walnut (*Juglans hindsii*). The two walnuts and two of the Douglas firs were previously felled due to hazardous conditions and were only stumps. Based on the site assessment and discussions with the client and project architect regarding planned development of the property, it is recommended that all eight remaining trees be removed. This recommendation is based on a combination of tree health, structural integrity, and proximity to planned structures.

Tree 1: Deodar Cedar (*Cedrus deodara*)

- **Location:** South corner of property in front of main building.
- **Coordinates:** 37.9689601, -122.3082426
- **Height:** Approx. 70 ft
- **DBH (Diameter at Breast Height):** 30 inches
- **Dripline Radius:** 30 ft
- **Condition:** Fair
- **Observations:** Main trunk splits into codominant stems at about 30 ft from the ground. Soil compaction is present around root flare and the root zone due to foot traffic and pavement. Limbs overhang roofline of current main building.
- **Recommendation:** Removal. The tree falls fully within the planned construction limits and the planned location of Unit 1 falls within the tree's dripline.

Tree 2: Douglas fir (*Pseudotsuga menziesii*)

- **Location:** Backyard behind main building, just north of garage.
- **Coordinates:** 37.9691206, -122.3085470
- **Height:** Approx. 80 ft
- **DBH (Diameter at Breast Height):** 32 inches
- **Dripline Radius:** 20 ft
- **Condition:** Fair
- **Observations:** Canopy shows some signs of dieback. Soil compaction is present around root flare and the root zone due to foot traffic and pavement.
- **Recommendation:** Removal. The tree falls fully within the planned construction limits and the planned locations of Units 4 and 5.

Tree 3: Citron (*Citrus medica*)

- **Location:** Backyard near chainlink fence.
- **Coordinates:** 37.9692041, -122.3085836
- **Height:** Approx. 18 ft
- **DBH (Diameter at Breast Height):** Numerous codominant stems converging well below breast height, average diameter 1.5 inches.
- **Dripline Radius:** 7 ft
- **Condition:** Fair
- **Observations:** Canopy shows some signs of dieback.
- **Recommendation:** Removal. The tree falls fully within the planned construction limits and planned hardscape for the fire department turnaround area.

Tree 4: Tree privet (*Ligustrum lucidum*)

- **Location:** Center of backyard.
- **Coordinates:** 37.9691917, -122.3086687
- **Height:** Approx. 20 ft
- **DBH (Diameter at Breast Height):** Numerous codominant stems converging well below breast height, average diameter 2 inches.
- **Dripline Radius:** 8 ft
- **Condition:** Good
- **Observations:** Tree 4 is growing up against Tree 5, with the stems almost fused.
- **Recommendation:** Removal. The tree falls fully within the planned construction limits and planned hardscape for the fire department turnaround area.

Tree 5: Common pear (*Pyrus communis*)

- **Location:** Center of backyard.
- **Coordinates:** 37.9691917, -122.3086687
- **Height:** Approx. 15 ft
- **DBH (Diameter at Breast Height):** 3x codominant stems, 4 inches, 5 inches, and 5 inches, respectively.
- **Dripline Radius:** 8 ft
- **Condition:** Fair
- **Observations:** Canopy shows some signs of dieback. Tree 5 is growing up against Tree 4, with the stems almost fused.
- **Recommendation:** Removal. The tree falls fully within the planned construction limits and planned hardscape for the fire department turnaround area.

Tree 6: Common fig (*Ficus carica*)

- **Location:** Center of backyard.
- **Coordinates:** 37.9692570, -122.3086734
- **Height:** Approx. 10 ft
- **DBH (Diameter at Breast Height):** Numerous codominant stems converging well below breast height, average diameter 1 inch.
- **Dripline Radius:** 6 ft
- **Condition:** Fair
- **Observations:** Canopy shows some signs of dieback.
- **Recommendation:** Removal. The tree falls fully within the planned construction limits and planned hardscape.

Tree 7: Olive (*Olea europaea*)

- **Location:** North corner of property.
- **Coordinates:** 37.9693423, -122.3086825
- **Height:** Approx. 40 ft
- **DBH (Diameter at Breast Height):** 4x codominant stems, 7 inches, 7 inches, 7 inches, and 11 inches, respectively.
- **Dripline Radius:** 20 ft
- **Condition:** Good
- **Observations:** None.
- **Recommendation:** Removal. The tree falls partially within the planned construction limits and its dripline partially overlaps the planned location of Unit 8. The tree is unlikely to survive grading and soil compaction even if tree protection

measures are implemented.

Tree 8: Olive (*Olea europaea*)

- **Location:** North corner of property.
- **Coordinates:** 37.9693767, -122.3087901
- **Height:** Approx. 40 ft
- **DBH (Diameter at Breast Height):** 5x codominant stems, 7 inches, 9 inches, 7 inches, 6 inches, and 10 inches, respectively.
- **Dripline Radius:** 20 ft
- **Condition:** Good
- **Observations:** None.
- **Recommendation:** Removal. The tree falls partially within the planned construction limits and its dripline partially overlaps the planned location of Unit 8. The tree is unlikely to survive grading and soil compaction even if tree protection measures are implemented.

Tree 9: Northern California black walnut (*Juglans hindsii*, but see Observations)

- **Location:** West edge of property.
- **Coordinates:** 37.9692554, -122.3089876
- **Height:** N/A
- **DBH (Diameter at Breast Height):** N/A, but stumps of 3x codominant stems measured 15 inches, 10 inches, and 17 inches, respectively.
- **Dripline Radius:** N/A
- **Condition:** Poor
- **Observations:** Only stump remains. Stump-sprouting shoots appear to be northern California black walnut (*Juglans hindsii*), but this species is frequently used as rootstock grafted to English walnut (*Juglans regia*).
- **Recommendation:** N/A, tree has already been removed.

Tree 10: Northern California black walnut (*Juglans hindsii*, but see Observations)

- **Location:** West edge of property.
- **Coordinates:** 37.9693339, -122.3089312
- **Height:** N/A
- **DBH (Diameter at Breast Height):** N/A, but stumps of codominant stems measured 13 inches and 8 inches, respectively.
- **Dripline Radius:** N/A

- **Condition:** Poor
- **Observations:** Only stump remains. Stump-sprouting shoots appear to be northern California black walnut (*Juglans hindsii*), but this species is frequently used as rootstock grafted to English walnut (*Juglans regia*).
- **Recommendation:** N/A, tree has already been removed.

Tree 11: Douglas fir (*Pseudotsuga menziesii*, but see Observations)

- **Location:** Northeast corner of main building.
- **Coordinates:** 37.9690867, -122.3082429
- **Height:** N/A
- **DBH (Diameter at Breast Height):** N/A, but stump measured 37 inches.
- **Dripline Radius:** N/A
- **Condition:** Dead
- **Observations:** Only stump remains and shows no sign of stump-sprouting. Cones scattered around stump are from Douglas fir (*Pseudotsuga menziesii*), so tree was most likely this species, but identification is tentative.
- **Recommendation:** N/A, tree has already been removed.

Tree 12: Douglas fir (*Pseudotsuga menziesii*, but see Observations)

- **Location:** Northwest corner of main building.
- **Coordinates:** 37.9691243, -122.3083489
- **Height:** N/A
- **DBH (Diameter at Breast Height):** N/A, but stump measured 34 inches.
- **Dripline Radius:** N/A
- **Condition:** Dead
- **Observations:** Only stump remains and shows no sign of stump-sprouting. Cones scattered around stump are from Douglas fir (*Pseudotsuga menziesii*), so tree was most likely this species, but identification is tentative.
- **Recommendation:** N/A, tree has already been removed.

Conclusion & Recommendation:

Based on the assessment, all eight remaining trees fall either partially or entirely within the construction limits and overlap with planned hardscape or structures. In alignment with the client's goals for long-term safety and property use, **the most appropriate action is the professional removal of all eight trees**. Removals should be conducted by a

licensed tree removal service following all applicable safety regulations and local laws.

If you have any questions or need further information, please feel free to contact me.

Best,

Aaron Sunshine
ISA Certified Arborist
WE-12959A
aaronsunshine@biomaas.com
310-467-9751

Photos:

Photo 1. Tree 1, Deodar Cedar (*Cedrus deodara*) at south corner of property in front of main building.

Photo 2. Tree 2, Douglas fir (*Pseudotsuga menziesii*), in backyard behind main building, just north of garage.

Photo 3. Trees 3 (left), 4 and 5 (center), and 6 (right) in backyard.

Photo 4. Trees 7 (right) and 8 (left), both olive (*Olea europaea*), at north corner of property.

GENERAL NOTES

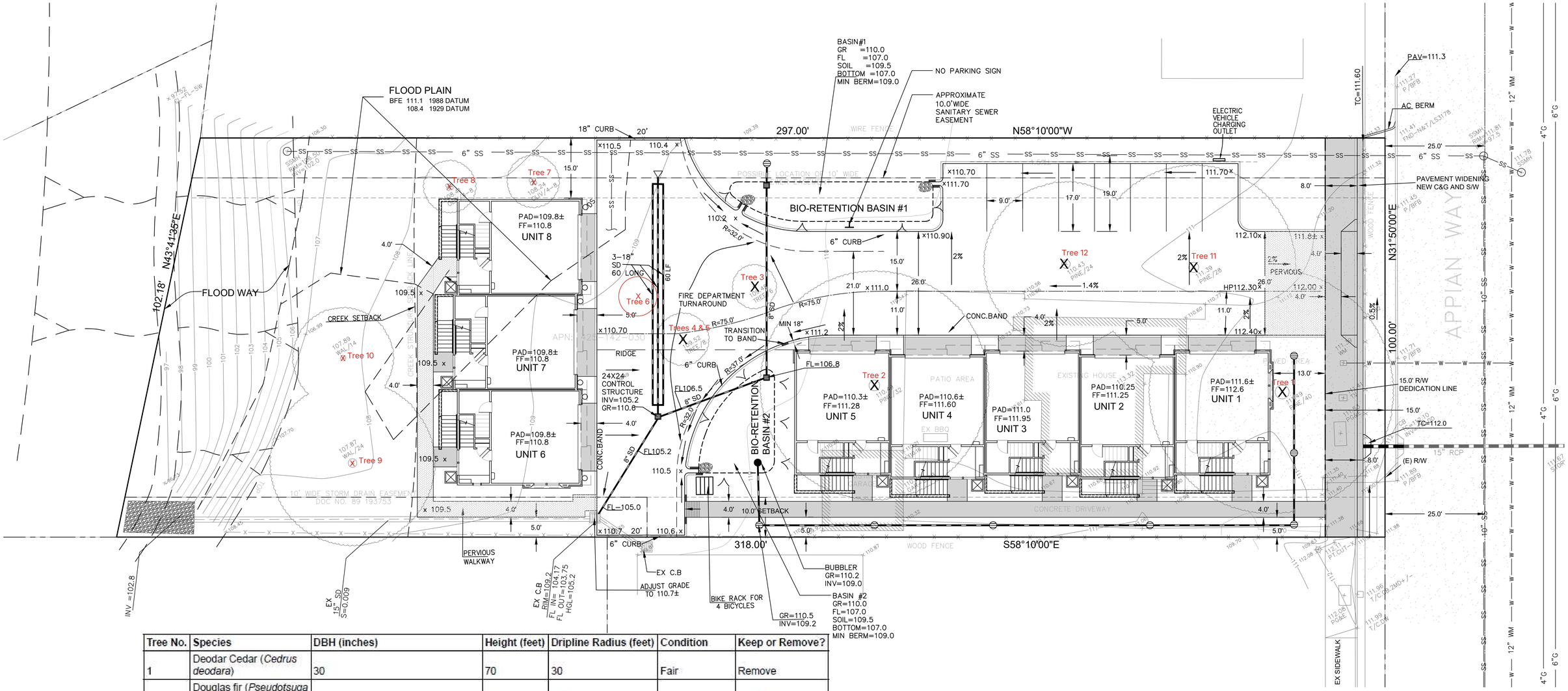
THE BOUNDARY AND TOPOGRAPHY SHOWN IS BASED UPON A BOUNDARY AND TOPOGRAPHIC SURVEY PREPARED BY DEBOLT CIVIL ENGINEERING, DATED 11/08/2017, JOB NO. 17277. PROVIDED BY ARCHITECT, GARY WHEELER. ELEVATIONS HAVE BEEN ADJUSTED TO COUNTY DATUM USING BENCHMARK NO. 3197, BRASS TAG IN HEADWALL OF CONCREET BOX CULVERT ON APPIAN WAY APPROX. 200' NE OF SANTA RITA ROAD. BM ELEVATION = 110.58'.

EARTH QUANTITIES

APPROXIMATE EARTH QUANTITIES TO BE VERIFIED BY CONTRACTOR

CUT	200 ± CU. YDS.
FILL	750 ± CU. YDS.

NOTE: EARTH QUANTITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL COMPUTE QUANTITIES INDEPENDENTLY TO VERIFY. ENGINEER IS NOT RESPONSIBLE FOR DISCREPANCIES.



Tree No.	Species	DBH (inches)	Height (feet)	Dripline Radius (feet)	Condition	Keep or Remove?
1	Deodar Cedar (*Cedrus deodara*)	30	70	30	Fair	Remove
2	Douglas fir (*Pseudotsuga menziesii*)	32	80	20	Fair	Remove
3	Citron (*Citrus medica*)	Many codominant stems below breast height, average diameter 1.5	18	7	Fair	Remove
4	Tree privet (*Ligustrum lucidum*)	Many codominant stems below breast height, average diameter 2	20	8	Good	Remove
5	Common pear (*Pyrus communis*)	3x codominant stems, 4, 5, 5	15	8	Fair	Remove
6	Common fig (*Ficus carica*)	Many codominant stems below breast height, average diameter 1	10	6	Fair	Remove
7	Olive (*Olea europaea*)	4x codominant stems, 7, 7, 7, 11	40	20	Good	Remove
8	Olive (*Olea europaea*)	5x codominant stems, 7, 9, 7, 6, 10	40	20	Good	Remove
9	Northern California black walnut (*Juglans hindsii*)	N/A, codominant stem stumps 15, 10, 17	N/A	N/A	Poor	N/A (stump)
10	Northern California black walnut (*Juglans hindsii*)	N/A, codominant stem stumps 13, 8	N/A	N/A	Poor	N/A (stump)
11	Douglas fir (*Pseudotsuga menziesii*)	N/A, stump 37	N/A	N/A	Dead	N/A (stump)
12	Douglas fir (*Pseudotsuga menziesii*)	N/A, stump 34	N/A	N/A	Dead	N/A (stump)

LEGEND

WM	WATER METER
PG&E	PG&E UTILITY BOX
	STORM DRAIN LINE
SS	SANITARY SEWER LINE
W	WATER LINE
G	GAS LINE
X	FENCE
x742.6	EXISTING GRADE
	AREA DRAIN
	DRAIN INLET
	LIGHT
	RIP-RAP

0 10 20 30
(IN FEET)
1 inch = 10 ft.

BEFORE EXCAVATING CALL U.S.A.

OWNER AND/OR CONTRACTOR ARE RESPONSIBLE FOR LOCATION AND VERIFICATION OF ALL EXISTING UNDERGROUND UTILITIES. UNDERGROUND SERVICE ALERT (USA) SHOULD BE NOTIFIED FOR ASSISTANCE IN THIS MATTER AT (800) 227-2600, 48 HOURS PRIOR TO ANY CONSTRUCTION. THE (USA) AUTHORIZATION NUMBER SHALL BE KEPT AT THE JOB SITE. LOCATION AND CHARACTER OF ANY UTILITIES IF SHOWN HEREON ARE APPROXIMATE, AND TAKEN FROM A COMBINATION OF SURFACE STRUCTURE OBSERVATION AND/OR THE RECORDS OF THE CONTROLLING AGENCY. HUMANN COMPANY DOES NOT ASSUME RESPONSIBILITY FOR THE LOCATION OF ANY EXISTING UTILITIES OR OTHER UNDERGROUND FEATURES SUCH AS VAULTS, TANKS, BASEMENTS, BURIED OBJECTS, ...ETC.

DP 22-3021

NO.	DATE	BY	REVISIONS
1	10/29/24	KU	REVISION PER CCC MEMO

SCALE 1" = 10
DATE 11/19/2024
ENGINEER
JOB NO. 22026

REGISTERED PROFESSIONAL ENGINEER IZZAT S. NASHASHIBI No. 29528 CIVIL STATE OF CALIFORNIA

IZZAT S. NASHASHIBI R.C.E. 29528

PRELIMINARY GRADING AND DRAINAGE

LOT 54, "SANTA RITA ACRES, UNIT NO.1" (22M645)

4301 APPIAN WAY -- APN:425-142-030

EL SOBRANTE CALIFORNIA

HUMANN COMPANY INC.
ENGINEERING - SURVEYING
1021 BROWN AVE. LAFAYETTE, CA 94549
PH (925)283-5000 FAX (925)283-3578

SHEET 2
OF 2 SHEETS

JOB NO. 22026

J:\PROJ\22026\22026_GRAD-DR.DWG XMOD: Tuesday, November 19, 2024 9:15:59 AM PLOT DATE: Tuesday, November 19, 2024 10:44:24 AM LAYOUT: GRAD-DR

ARCHAEOLOGICAL SURVEY REPORT

4301 APPIAN WAY, EL SOBRANTE

PREPARED BY:

DANIEL SHOUP, RPA

ARCHAEOLOGICAL/HISTORICAL CONSULTANTS

PREPARED FOR: NUMAIR ALI

313 SYCAMORE VALLEY ROAD W

DANVILLE, CA 94526

JANUARY 2024

609 AILEEN STREET, OAKLAND, CA 94609 / AHC-HERITAGE.COM

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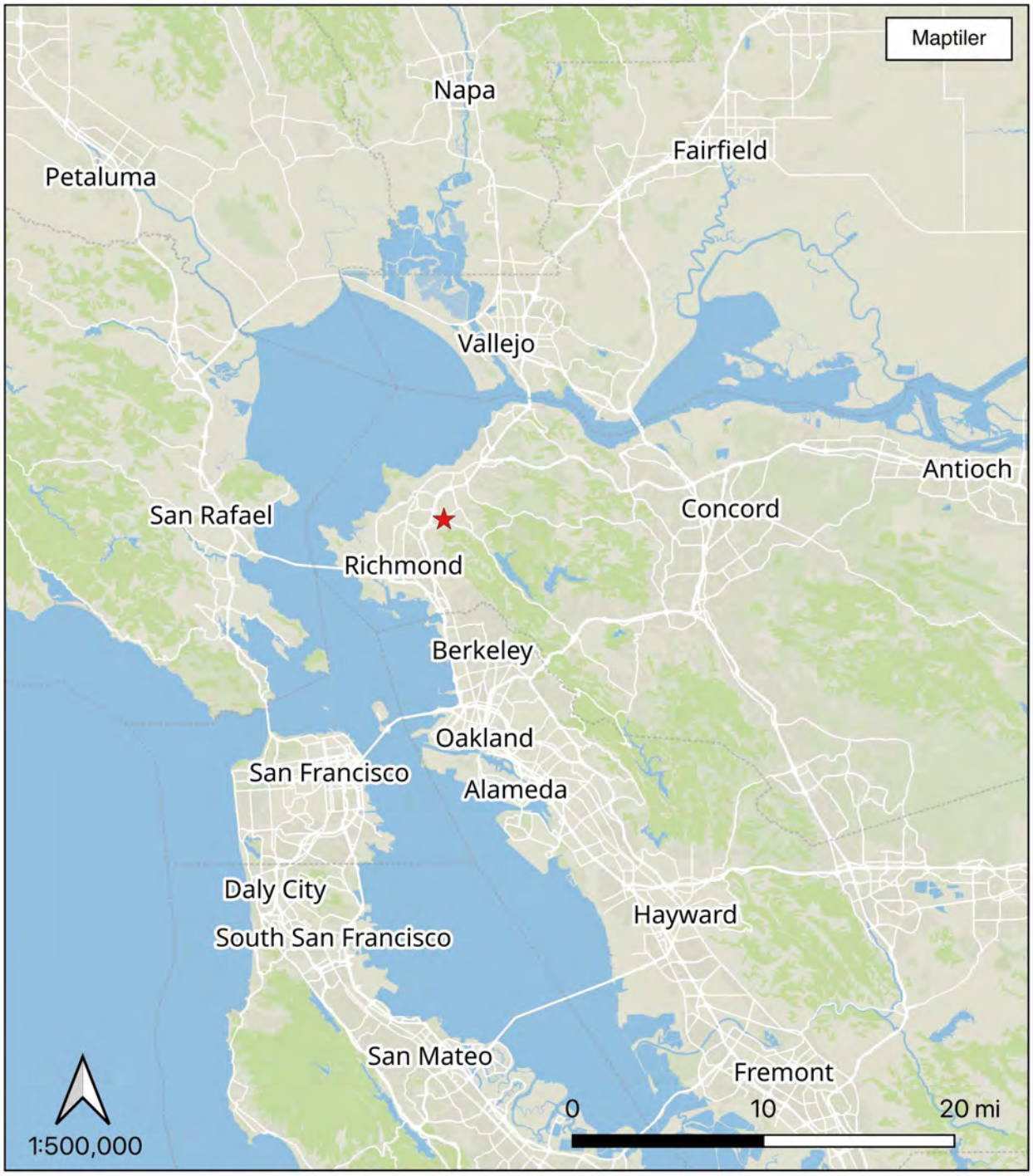
INTRODUCTION AND SUMMARY OF FINDINGS

The project at 4301 Appian Way in El Sobrante (APN 425-142-305) proposes to demolish the existing structures on the 0.71-acre parcel and construct new single-family homes. The parcel is currently developed with a single-family home built circa 1938.

To ensure that the project does not affect historical resources or unique archaeological resources as defined in the CEQA Guidelines, Archaeological/Historical Consultants reviewed archival sources and completed a pedestrian survey to assess the archaeological sensitivity of the project area.

The project area has a high sensitivity for buried Native American archaeological deposits. Archaeological testing and/or monitoring are recommended as mitigation measures in order to assure that the project does not cause a significant adverse effect to the integrity of a historical resource as defined at 14 CCR §15064.5.



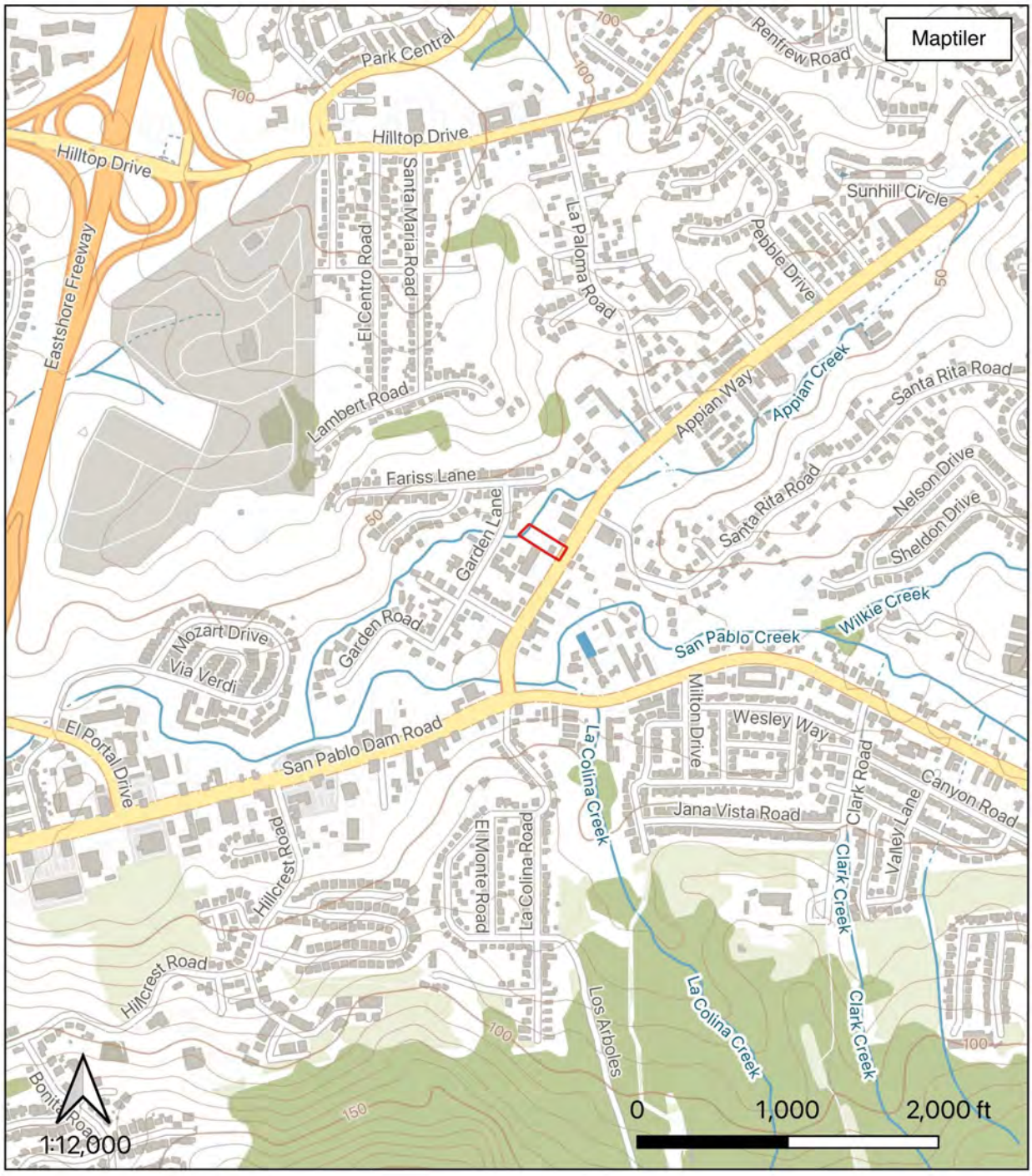
Project Location Map

4301 Appian Way, El Sobrante

Legend

★ Project Location

Figure 1: Project Location



Project Vicinity Map

4301 Appian Way, El Sobrante

Legend

Project Area

Figure 2: Project Vicinity

Figure 3: Project Area Limits Map

PREVIOUS STUDIES AND ARCHIVAL RESEARCH

RECORD SEARCH RESULTS

A record search for the project area and a ¼-mile radius around it was completed on January 17, 2024 (NWIC File No. 23-0807). No cultural resources were identified within the project area.

CULTURAL RESOURCES WITHIN ¼ MILE OF PROJECT AREA

Five cultural resources have been previously recorded within the search radius, including four Native American archaeological sites and one historic-period ranch property.

- P-07-000068 (CA-CCO-126) is located 1000 feet southeast of the project area on the south bank of San Pablo Creek. In 1950 Baumhoff recorded it as a Native American "occupation site" and neighbors noted the discovery of Native American artifacts. Far Western tested part of the recorded site area in 2018, leading to adjustments to the site boundary.
- P-07-000093 (CA-CCO-151) is a Native American shell midden site located on the north bank of San Pablo Creek, 800 feet southeast of the project area. Artifacts observed in 1949 included charmstones, projectile points, mica ornaments, pestles, and a mortar. A burial was also recorded in 1953.
- P-07-000097 (CA-CCO-155) is a 3-acre shell midden site 500 feet southwest of the project area. Artifacts observed in 1950 included chert and obsidian tools, bone tools, projectile points, and choppers; the site has never been excavated.
- P-07-000276 (CA-CCO-505) is a shell midden site located about 500 feet northeast of the project area. In 1950, burials and artifacts were recovered by the former owners, including a large mortar.
- P-07-000839, the Lu Farm Complex, is located at 4439 Appian Way. It consists of historic features associated with the former ranch on the property.

PREVIOUS STUDIES

The project area has not been previously surveyed in its entirety. In 1986, archaeological surveys for the Appian Way widening project examined part of the project area, but did not identify new resources (S-7131, Banks 1986a, 1986d). The property next door at 4247 Appian Way was surveyed in 1988 prior to development of the existing commercial building, but no resources were identified on the surface (Flynn 1988). Other nearby properties that have been previously surveyed include 4150 Appian Way (S-027935, Holson 2004), 4439 Appian Way (S-022273, Schneyder 1999), and 4441 Appian Way (S-031545, Pastron 2006). Please see Table 1 for a complete list of studies and resources identified.

Table 1: Reports within ¼ mile of the project area

S#	Reference	Title	Resources
S-007131	Banks 1985	An Archaeological Reconnaissance of the Appian Way Widening Project: Phase II, El Sobrante, Contra Costa County, California.	07-000097, 07-000276
S-007131	Banks 1986a	Subsurface Archaeological Investigations for the Appian Way Widening Project, El Sobrante, Contra Costa County, California	
S-007131	Banks 1986b	Historic Property Survey Report for Appian Way Road Widening and Improvement Project	
S-007131	Banks 1986c	Historic Structures Survey Report for Appian Way Road Widening and Improvement Project	
S-007131	Banks 1986d	Subsurface Archaeological Investigations for the Appian Way Widening Project, El Sobrante, Contra Costa County, California (Revised)	
S-011534	Flynn 1988	Archaeological survey of property located at 4247 Appian Way, El Sobrante, Contra Costa County (letter report)	
S-001999	Baldrica 1980	An Archaeological Survey of the Kraus Property, Contra Costa County, California.	
S-006577	Baker 1984	Archaeological Reconnaissance of the El Sobrante Condominiums Development, Contra Costa County, California	
S-006592	Banks 1984	An Archaeological Reconnaissance of the Appian Way Widening Project, El Sobrante, Contra Costa County, California.	
S-007988	Orlins 1986	A Cultural Resource Investigation for the San Pablo Dam Road Widening Project, El Sobrante, Contra Costa County, California.	07-000068
S-008100	Baker 1986	Archaeological Reconnaissance of the Tyson Property, Parcel #425-170-025, El Sobrante, Contra Costa County.	
S-008852	Miller and Baker 1986	Archaeological Reconnaissance of the El Sobrante Partnership Property, El Sobrante, California	
S-009687	Flynn 1987	Archaeological survey of lot at 4221 San Pablo Dam Rd., El Sobrante, Contra Costa County (Co. File No. 3027-87, APN 425-160-008)	
S-010228	Wood 1988	The Archaeological Monitoring of Excavations for Three Electrical Vaults on Appian Way, El Sobrante, Contra Costa County, California	
S-011533	Flynn 1988	Archaeological evaluation of 4158 Santa Rita Road, El Sobrante, Contra Costa Co., Subdivision MS 7-88 (letter report)	
S-012297	Flynn 1991	Archaeological evaluation of 4201 Garden Lane, El Sobrante, Contra Costa Co., Project No. MS 192-90 (letter report)	
S-022273	Schneyder 1999	A Cultural Resources Study of 4439 Appian Way (APN# 425-110-021), El Sobrante, Contra Costa County, California	07-000839
S-027935	Holson 2004	Archaeological Survey and Record Search Results for 4150 Appian Way, El Sobrante (APN 425-170-030) (letter report)	
S-031545	Pastron 2006	Phase II - Cultural Resources Evaluation of an Approximately 1.2-acre Parcel Located at 4441 Appian Way, City of El Sobrante, Contra Costa County, California (letter report)	07-000276
S-044169	DeGeorgey and Snyder 2013	Cultural Resources Constraints Report: Santa Rita and Penny GPRP ED El Sobrante	
S-051734	Whitaker 2018	Historic Property Survey Report for the San Pablo Dam Road Sidewalk Project, El Sobrante, Contra Costa County, California, 4-CCO-HSIPL-5928(133)	07-000068
S-051734	Whitaker et al. 2018	Archaeological Survey Report for the San Pablo Dam Road Sidewalk Project, El Sobrante, Contra Costa County, California	
S-051734	Parker et al. 2018	Extended Phase I Report for the San Pablo Dam Road Sidewalk Project, El Sobrante, Contra Costa County, California	

Please see Appendix 1 for complete record search results.

SACRED LANDS FILE SEARCH

On December 15, 2023, the Native American Heritage Commission (NAHC) completed a search of its Sacred Lands File for information about Native American sacred sites and tribal cultural resources in the project vicinity. The search was positive, and the NAHC recommended contacting tribes on their contact list for Contra Costa County for additional information.

Please see Appendix 2 for search results and contact list.

BACKGROUND

SETTING AND ENVIRONMENT

The project area totals 0.71 acres and is approximately 100 feet above sea level. It slopes gently downward from Appian Way northwest toward Appian Creek. Site soils are alluvium laid down in the Holocene era, classified by the USDA as part of the Cropley Complex, a clayey bottomland soil (Witter et al. 2006; USDA 2023). The project area lies between San Pablo Creek, 360 feet (110 meters) to the southeast, and Appian Creek, which flows along the northwest edge of the project area.

In the early historic era, the environment of the project area was oak woodland, with grassland alternating with groves of coast live oak, buckeye, and bay laurel. Underneath and between the oak groves was low herbaceous vegetation characterized by native grasses and wildflowers. The dense woodlands were very beautiful, and settlers often compared their appearance to parks or orchards. This park-like environment was likely a reflection of Native American forest management practices, which often used fire to remove understory plants allowing space for trees and meadows to flourish. (Golla 2007; Beller et al. 2010: 46, 52-53).

NATIVE AMERICAN SETTLEMENTS

At the time of Spanish contact, the Huchiun people inhabited the project area. They spoke the Chochenyo dialect of the Ohlone/Costanoan language, which was used along the eastern, western, and southern shores of San Francisco Bay prior to 1770. Though there were significant differences among Ohlone/Costanoan dialects, they were likely to have been mutually intelligible (Milliken et al. 2007:33). Ohlone, which is closely related to the Miwok languages, is a branch of the Yok-Utian subfamily of the Penutian languages that are spoken in Central California and along the Pacific Coast as far as southeast Alaska. Penutian speakers likely entered central California from the northern Great Basin around 4000-4500 years ago and arrived in the San Francisco Bay Area about 1500 years ago, displacing speakers of Hokan languages (Golla 2007:74).

Ohlone society was organized in independent local tribes of 200-400 people, living in several semi-permanent villages, that controlled fixed territories averaging 10 to 12 miles in diameter (Milliken *et al.* 2007). Shoup and Milliken (1999:8) note that local tribes: were clusters of unrelated family groups that formed cooperative communities for ceremonial festivals, for group harvesting efforts, and – most importantly – for interfamily conflict resolution." Hereditary village leaders, who could be male or female, played an important role in conflict resolution, receiving guests, directing ceremonies, organizing food-gathering expeditions, and leading war parties but did not otherwise exercise direct authority (Levy 1978:487). Despite their autonomy, intermarriage between local tribes appears to have been frequent (Milliken 1995:22-24).

Huichun territory appears to have extended from Temescal Creek in present-day Oakland northward along the bay shore to San Pablo Bay. In prehistory, the San Francisco Bay region was densely populated compared to most hunter-gatherer societies. Milliken et al. (2007:64-65) estimate a population density for the East Bay shore at 5-6 people per square mile and a Huichun population of

approximately 779 around the time of Spanish contact. Much of this population was concentrated along San Pablo and Wildcat Creeks.

THE HISTORIC ERA

FIRST CONTACT AND MISSIONIZATION

The first direct Spanish contact with the Huchiun seems to have been the expedition of 1792 led by Pedro Fages. In March 1772, the expedition came to a village on the southeast shore of San Pablo Bay, perhaps in the Wildcat Creek/San Pablo Creek vicinity, where they experienced a warm welcome with an exchange of gifts (Milliken 1995:36-37). Father Juan Crespí, a diarist with the expedition, noted:

> We found a good village of heathen, very fair and bearded, who did not know what to do, they were so happy to see us in their village. They gave us many cacomites, amoles, and two dead geese, dried and stuffed with grass…We returned the gift with beads, for which they were very grateful, and some of them went with us to another village near by (Crespí [1772] 1927:291, quoted in Milliken 1995:37).

When the Spanish ship *San Carlos* came to San Pablo Bay in 1775, a group of Huchiun men visited the boat and carried out an elaborate exchange of courtesies between the two groups (Milliken 1995:47-49). In April 1776 the Juan Bautista de Anza expedition passed through Huchiun territory, stopping at a large village somewhere north of San Pablo Creek, where they were welcomed with singing and dancing and an exchange of gifts (Milliken 1995:55). At this village they encountered 23 men and seven women, with the rest "in the woods hunting for tule, herbs, and roots they eat" (Font 1930:364, quoted in Holson *et al.* 2000:19).

Mission Dolores was founded in San Francisco in 1776. Sometime between 1776 and 1787 a few Huchiun people appear to have gone to the mission, but the first large groups came in the fall of 1794. Mission records indicate that there were approximately 384 Huchiun converts, as well as 95 from an apparently mixed group of Huchiun and Aguastos (Milliken 1995:243). However, dismal conditions at the Mission – including abusive treatment by the priests, hunger, disease, and overwork – led to extensive resistance followed by Spanish military reprisals. A massive flight of converts from the mission took place in 1795 and led to the end of voluntary conversions (Milliken 1995:142-146). In 1797 Spanish military actions against native villages in the east bay included attacks on three Huchiun villages near San Pablo Bay and the capture of numerous Huchiun resisters. Such resistance was quelled by 1801 (Milliken 1995:158-160,170). The last unmissionized Huchiun went to San Francisco between 1801 and 1805 (Milliken et al. 2007:107).

Missionization was a disaster for the native people of the San Francisco Bay area. European diseases ran rampant, with death tolls reaching 8% per year, higher among women and children, and Mission livestock grazing began to degrade the local environment, impacting the availability of traditional food resources for those Native Americans who remained outside the Mission system; by 1810 traditional cultures were collapsing throughout coastal and central California (Milliken 1995:221).

RANCHO SAN PABLO IN THE SPANISH AND MEXICAN PERIODS (1800-1848)

Mission Dolores established a cattle station on San Pablo Creek by 1820 (or perhaps earlier). The area, called "San Ysidro del los Juchiunes" saw at least nine births and five deaths of Mission Dolores Indian families between 1820 and 1823 (Milliken et al. 2007:123). Living quarters and a storehouse, probably made of adobe, were built sometime between 1817 and 1823 (Hendry and Bowman 1940:488). These structures were probably located about two miles west of the project area in present day San Pablo (Banks and Orlins 1979:5.2).

In 1823, Mission Dolores agreed to give up the San Pablo outstation, which was transferred to Francisco María Castro as part of the Rancho Cochiyumes or Rancho San Pablo land grant. Rancho San Pablo included four square leagues (almost 18,000 acres), including present-day Richmond, San Pablo, and Kensington. The project area is at the eastern edge of the grant. Francisco Castro (1775-1831) had arrived in California as a boy with the Anza expedition, served as an artillery corporal at the Presidio of San Francisco, and lived at the Pueblo de San José from 1796 to 1824, serving as alcalde and in other offices. Castro and his wife, María Gabriela Berryessa de Castro, lived at the ranch from 1826 and continued cattle operations there (Hendry and Bowman 1940:489; Hoover et al. 1966:54). It is unknown whether any of the Indian families who worked on the rancho prior to 1823 remained.

After Castro's death, the land was divided between his widow and 11 children. The Rancho San Pablo grant was confirmed to Castro's heirs by the Mexican government in 1834 and patented by the United States government in 1852 (Hoover *et al* 1966:54; Beck and Haase 1974:section 30). None of the adobe buildings constructed by the Castros were located near the project area (Hendry and Bowman 1940).

THE AMERICAN PERIOD (1849-1950)

When California joined the Union in 1850, the extended Castro family had to defend their land against American squatters who occupied large tracts of the rancho. Although rights to the rancho were collectively held, some Castro family members sold specific lots to American newcomers, creating uncertainty about land title in the area that culminated in the *Emeric vs. Alvarado* case, involving hundreds of claimants and settled by the California Supreme Court in 1889, with a final partition decision in 1894 (California Superior Court 1894).

Though Appian Way was established in its current alignment by 1894, the part of Rancho San Pablo that lies within today's El Sobrante remained largely undeveloped until 1916 (Sandow 1894; McMahon 1908). That year, the People's Water Company began constructing San Pablo Dam and the adjoining San Pablo Dam Road (Emanuels 1986). At that time there was only one house at the junction of Appian Way and San Pablo Dam Road, with no development along Appian Way (USGS 1915). The East Bay Municipal Utility District (EBMUD) took over San Pablo Dam in 1923. The advent of World War II saw a huge population boom in western Contra Costa County, as workers flocked from around the country to new jobs at the Kaiser Richmond shipyards. El Sobrante's population grew from 100 in 1937 to 1800 in 1944. A cluster of commercial buildings developed along Appian Way after the war, including a new fire station, movie theater, post office, and library. The area, however, retained its rural character: Appian Way remained unpaved in the 1950s (Emanuels 1986:153; El Sobrante Historical Society 2018). Suburban development in the late 20th century increased the population of El Sobrante to over 12,000 by 2000.

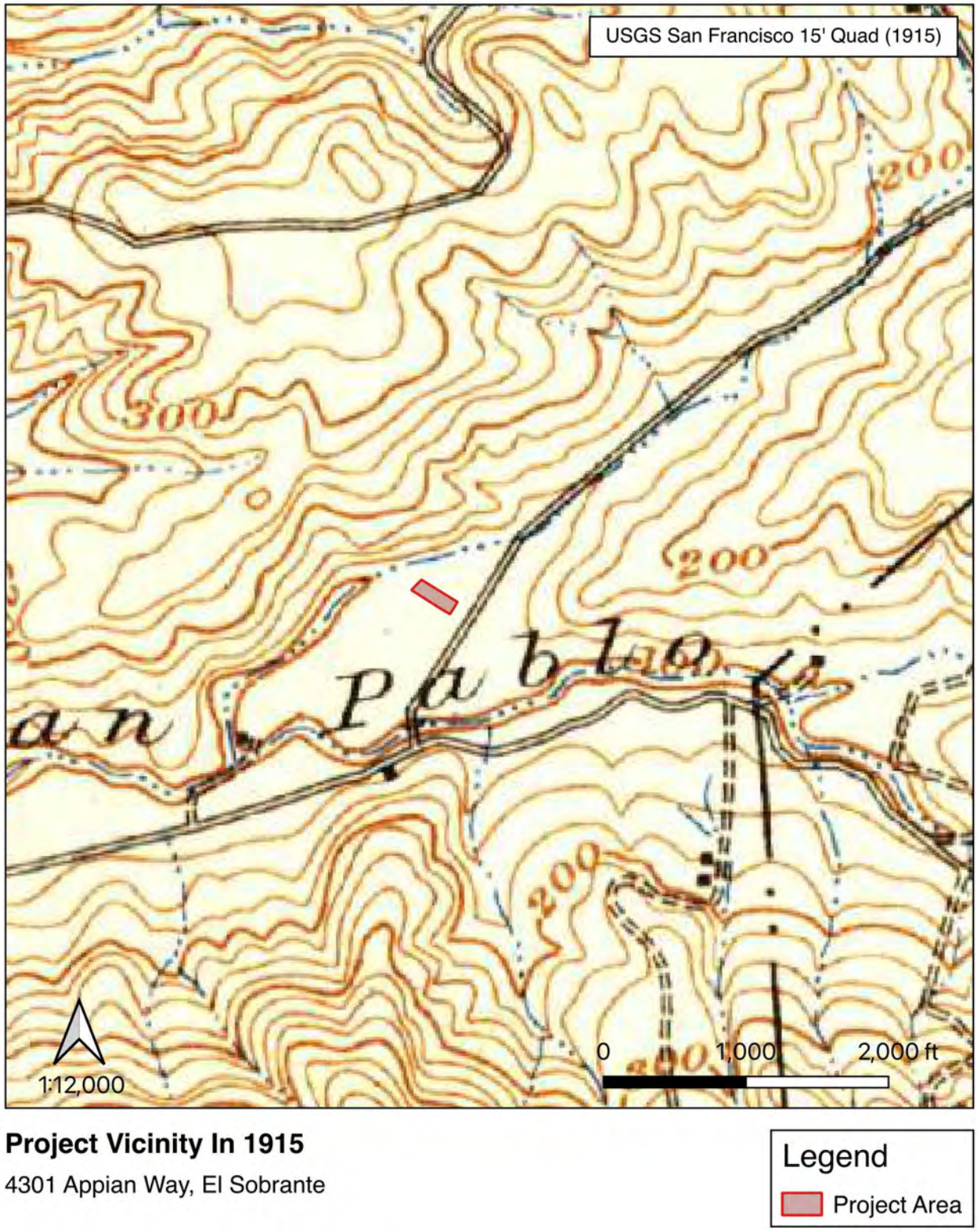


Figure 4: Project Vicinity in 1915

LAND USE IN THE PROJECT AREA

As noted above, members of the Castro family sold parts of the undivided rancho to American newcomers after 1852. In the 1880s, the project area was part of a 336-acre property owned by Linder and McGee. Reynold Linder was an agricultural products salesman in San Pablo (Contra Costa Assessor 1883, 1887; Martinez News-Gazette 1879). No information was available on McGee or on land use in the project area.

At the final partition of Rancho San Pablo in 1894, the project area was part of a 426-acre tract owned by Theodore Hittell (Sandow 1894). Hittell (1830-1917) was a native of Ohio who arrived in California in 1855 and was a reporter, land use lawyer, state senator, author, and historian of California (Dickey et al. 1918). His residence was in San Francisco, and the El Sobrante parcel was one of many properties he owned; no evidence was found of his direct connection to the project area. Hittell owned the project area until at least 1908. By 1924, however, it was part of the Jack McMahon dairy ranch. McMahon (1871-1924) was a rancher from Ireland who operated the Varsity Creamery Company (Richmond Independent 1914). He may have been in partnership with George Mulligin; a 1930 county map shows the project area as part of a 425-acre tract owned by Mulligin and McMahon (Martinez News Gazette 1924; Arnold 1930).

Appian Way began to be subdivided in the 1930s and was part of the Santa Rita Acres subdivision by 1938 (Arnold 1938). The current house on the property was constructed circa 1939. Appian Way was paved in 1953, and was widened in the late 1980s (Emanuels 1986:153).

ARCHAEOLOGICAL SURVEY

METHODS AND CONSTRAINTS

Alexi Atteberry surveyed the area of potential effect (APE) at 4301 Appian Way on December 28, 2023. Mr. Atteberry is a qualified archaeologist with nearly 10 years of experience in California archaeology. The project area was surveyed in approximately 10-meter transects. The majority of ground surface within the project area was unpaved and soil exposure using a hand trowel was conducted throughout the transects.

Figure 5: clockwise from left: overview from southeast corner of project area, looking northwest; soil exposure in the northeast corner; overview of western part of parcel, looking west; soil exposure in the northwest area.

RESULTS

Ground visibility of was good, except for the southeast part of the property, where a single-family home and driveway are located. Most of the project area is covered with grass and small trees, with moderate obstruction of view near the creek due to a heavy growth of English ivy *(Hedera helix)*. Due to significant rainfall prior to survey, observed soils fell within range of damp to wet, affecting the Munsell color reading. Throughout the project area, the soil type was observed as a loam with rock inclusions ranging from 10% in the majority of the survey area to approximately 20% in the west-northwest part of the property near the creek bank. In the northeast corner the soil color was a very dark grayish brown (Munsell 10YR 3/2) with low moisture, transitioning to a very dark brown (Munsell 10YR 2/2) loam with increased moisture in the northwest; and finally a black (Munsell 10YR 2/1) loam in the southwest area.

Figure 6: at left, overview from the northwest corner, looking southeast; at right, soil exposure in the center of the project area.

Observed materials throughout the project area include brick fragments and other building debris such as nails and wood, as well as modern refuse near the creek. No cultural material from the historic or prehistoric periods was observed throughout the project area.

ARCHAEOLOGICAL SENSITIVITY

NATIVE AMERICAN ARCHAEOLOGICAL SITE SENSITIVITY

Archaeological sites are most often found in flat locations with access to a perennial source of fresh water. Soils deposited during the Holocene era (since 11,700 years ago), especially young alluvium from the last 2,000-3,000 years, are more likely to contain buried archaeological deposits. Native American sites are most often found within ½-mile of major and ¼-mile of minor watercourses, and within 500 feet of shorelines (Meyer and Kaijankoski 2017).

The project is mostly flat, located on Holocene-era alluvial soils, and is adjacent to two perennial watercourses. The vicinity is known to have had a dense pre-contact Native American population, and four Native American archaeological sites are located within ¼ mile of the project area. The project area thus appears to have a high sensitivity for buried Native American archaeological resources.

HISTORIC-PERIOD ARCHAEOLOGICAL SITE SENSITIVITY

Several factors can be used to infer an area's sensitivity for buried historic-period archaeological resources (Caltrans 2007). These include surface scatters of artifacts, documentary sources (historic maps, deeds, or photographs), standing buildings or structures that suggest patterns of land use (homes, barns, ponds, fences, industrial facilities), and ecological or landscape features (steep hills, bodies of water, wetlands).

Historical research did not identify any development on the project area prior to 1939. Before that, it was likely used intermittently for cattle grazing. While trash deposits associated with the current residence may be present on the project area, they are unlikely to have sufficient information potential to make them eligible to the California Register of Historical Resources. The project area thus has a low sensitivity for buried historic-period archaeological deposits.

RECOMMENDATIONS

The project area has a high sensitivity for buried Native American archaeological deposits, and is located within 1000 feet of four shell midden sites (CA-CCO-126, CA-CCO-151, CA-CCO-155, and CA-CCO-505), three of which are known to contain burials. To ensure that the project does not cause substantial adverse impacts to historical resources as defined at 14 CCR §15064.5, we recommend the following mitigation measures:

1. Prior to any ground-disturbing activity, construction crews should receive a cultural resources training from a qualified archaeologist. The training should review the types of cultural resources that might be found, the legal obligations of the contractors, and steps to follow if archaeological materials or human remains are identified.
2. Prior to issuance of a building permit, a qualified archaeologist should design a subsurface testing program to assess the presence or absence of buried archaeological sites in the project area. Mechanical trenching of a representative sample of the project area to the level of potential ground disturbance or four feet, whichever is greater, should be completed in order to evaluate the presence and depth of possible cultural soils. Mechanical trenching may be supplemented by hand augering or other sampling strategies as needed. All mechanical excavations should be monitored by a qualified archaeologist and representative of the Native American community. If cultural resources are identified, it may be necessary to collect additional data to evaluate the significance of the resource.
3. Should subsurface testing not prove feasible, ground-disturbing activity on the project area should be monitored by a qualified archaeologist and representative of the Native American community until sufficient information has been gathered to demonstrate the presence or absence of archaeological resources within the area that will be disturbed by the proposed project.
4. If human remains are found during monitoring, the monitor will stop all activity within a 100-foot radius, and the Contra Costa County Coroner will be informed. If the remains appear to be Native American, the Native American Heritage Commission will be notified and invited to identify a Most Likely Descendant, who will make recommendations regarding reburial of the human remains, per §15064.5(e) of the CEQA Guidelines.

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APPENDIX 1: NWIC RECORD SEARCH

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA, COLUSA, CONTRA COSTA, DEL NORTE, HUMBOLDT, LAKE, MARIN, MENDOCINO, MONTEREY, NAPA, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, SONOMA, YOLO

Northwest Information Center
Sonoma State University
1400 Valley House Drive, Suite 210
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
https://nwic.sonoma.edu

1/17/2024 NWIC File No.: 23-0807

Daniel Shoup
Archaeological/Historical Consultants
609 Aileen Street
Oakland, CA 94609

Re: 23-64 4301 Appian Way

The Northwest Information Center received your record search request for the project area referenced above, located on the Richmond USGS 7.5' quad(s). The following reflects the results of the records search for the project area and a ¼ mi. radius:

Resources within project area:	None listed
Resources within ¼ mi. radius:	P-07-000068, P-07-000093, P-07-000097, P-07-000276, P-07-000839
Reports within project area:	S-7131, 11534
Reports within ¼ mi. radius:	[15] Please see attached list, page 3

Resource Database Printout (list):	☐ enclosed	☒ not requested	☐ nothing listed
Resource Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Report Digital Database Records:	☒ enclosed	☐ not requested	☐ nothing listed
Resource Record Copies:	☒ enclosed	☐ not requested	☐ nothing listed
Report Copies:	☐ enclosed	☒ not requested	☐ nothing listed
OHP Built Environment Resources Directory:	☐ enclosed	☒ not requested	☐ nothing listed
Archaeological Determinations of Eligibility:	☐ enclosed	☒ not requested	☐ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed	☒ not requested	☐ nothing listed
GLO and/or Rancho Plat Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Maps:	☐ enclosed	☒ not requested	☐ nothing listed

Local Inventories:	☐ enclosed	☒ not requested	☐ nothing listed
Caltrans Bridge Survey:	☐ enclosed	☒ not requested	☐ nothing listed
Ethnographic Information:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Literature:	☐ enclosed	☒ not requested	☐ nothing listed
Shipwreck Inventory:	☐ enclosed	☒ not requested	☐ nothing listed

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Annette Neal

Researcher

Reports In 1/4 mi. Buffer

DocCo	DocNo
S-	001999
S-	006577
S-	006592
S-	007988
S-	008100
S-	008852
S-	009687
S-	010228
S-	011533
S-	012297
S-	022273
S-	027935
S-	031545
S-	044169
S-	051734

Resource Detail: P-07-000068

Identifying information

Primary No.: P-07-000068
Trinomial: CA-CCO-000126
Name: [none]
Other IDs:

Type	*Name*
Resource Name	[none]

Cross-refs:

Attributes

Resource type: Site
Age: Prehistoric
Information base: Testing, Other
Attribute codes: AP15 (Habitation debris)
Disclosure: Not for publication
Collections: Yes
Accession no(s):
Facility: Nelson (a neighbor)

General notes

Recording events

	Date	*Recorder(s)*	*Affiliation*	*Notes*
a	2/4/1950	Baumhoff	University of California	
b	7/26/2018	John Berg	Far Western Anthropological Research Group	

Associated reports

Report No.	*Year*	*Title*	*Affiliation*
S-007988	1986	A Cultural Resource Investigation for the San Pablo Dam Road Widening Project, El Sobrante, Contra Costa County, California.	California Archaeological Consultants, Inc.
S-051734	2018	Historic Property Survey Report for the San Pablo Dam Road Sidewalk Project, El Sobrante, Contra Costa County, California, 4-CCO-HSIPL-5928(133)	Far Western Anthropological Research Group, Inc.
S-053807	1978	Phase I Study of Identified Cultural Resources Within the Impact Area of the East Bay Municipal Utilities District Subregional Water Reclamation Study Projects Area	Ann S. Peak & Associates

Location information

County: Contra Costa
USGS quad(s): Richmond
Address:
PLSS:
UTMs: Zone 10 561450mE 4202170mN NAD27

Management status

Database record metadata

	Date	*User*	
Entered:	4/1/2005	icrds	
Last modified:	2/4/2020	hagell	
IC actions:	*Date*	*User*	*Action taken*
	3/1/2019	murazzoj	Adjusted site boundary slightly. Location and general shape are consistent.
	4/1/2005	jay	Appended records from discontinued ICRDS.
	2/28/2019	akmenkalnsj	Verified

Record status: Verified

Resource Detail: P-07-000093

Identifying information

Primary No.: P-07-000093
Trinomial: CA-CCO-000151
Name: [none]
Other IDs:

Type	*Name*
Resource Name	[none]

Cross-refs:

Attributes

Resource type: Site
Age: Prehistoric
Information base: Survey, Excavation, Other
Attribute codes: AP15 (Habitation debris)
Disclosure: Not for publication
Collections: Yes
Accession no(s): 44, 313
Facility: UCAS

General notes

Recording events

Date	*Recorder(s)*	*Affiliation*	*Notes*
10/28/1949	T. Meighan, B. Squire, A. Pilling	[none]	

Associated reports

Report No.	*Year*	*Title*	*Affiliation*
S-002458	1981	Overview of Prehistoric Archaeology for the Northwest Region, California Archaeological Sites Survey: Del Norte, Humboldt, Mendocino, Lake, Sonoma, Napa, Marin, Contra Costa, Alameda	Northwest Regional Office, California Archaeological Sites Survey, Anthropological Studies Center, Sonoma State University
S-049780	2017	San Francisco Bay-Delta Regional Context and Research Design for Native American Archaeological Resources, Caltrans District 4	California Department of Transportation, District 4
S-053807	1978	Phase I Study of Identified Cultural Resources Within the Impact Area of the East Bay Municipal Utilities District Subregional Water Reclamation Study Projects Area	Ann S. Peak & Associates

Location information

County: Contra Costa
USGS quad(s): Richmond
Address:
PLSS:
UTMs: Zone 10 561150mE 4202300mN NAD27

Management status

Database record metadata

	Date	*User*	
Entered:	4/1/2005	icrds	
Last modified:	2/4/2020	hagell	
IC actions:	*Date*	*User*	*Action taken*
	4/1/2005	jay	Appended records from discontinued ICRDS.

Record status: Verified

Resource Detail: P-07-000097

Identifying information

Primary No.: P-07-000097
Trinomial: CA-CCO-000155
Name: El Sobrante Library Site
Other IDs:

Type	*Name*
Resource Name	El Sobrante Library Site

Cross-refs:

Attributes

Resource type: Site
Age: Prehistoric
Information base: Survey
Attribute codes: AP15 (Habitation debris)
Disclosure: Not for publication
Collections: No
Accession no(s):
Facility:

General notes

Recording events

	Date	*Recorder(s)*	*Affiliation*	*Notes*
a	3/25/1950	T. Bolt	[none]	
b	2/21/1985	Peter Banks	[none]	

Associated reports

Report No.	*Year*	*Title*	*Affiliation*
S-007131	1985	An Archaeological Reconnaissance of the Appian Way Widening Project: Phase II, El Sobrante, Contra Costa County, California.	California Archaeological Consultants, Inc.
S-008186		VOIDED S# - additional citation 'a' of S-7131.	
S-053807	1978	Phase I Study of Identified Cultural Resources Within the Impact Area of the East Bay Municipal Utilities District Subregional Water Reclamation Study Projects Area	Ann S. Peak & Associates

Location information

County: Contra Costa
USGS quad(s): Richmond
Address:
PLSS:
UTMs: Zone 10 560700mE 4202220mN NAD27

Management status

Database record metadata

	Date	*User*	
Entered:	4/1/2005	icrds	
Last modified:	2/4/2020	hagell	
IC actions:	*Date*	*User*	*Action taken*
	2/17/2017	moored	Updated GIS, remapped into approximate
	4/1/2005	jay	Appended records from discontinued ICRDS.

Record status: Verified

Resource Detail: P-07-000276

Identifying information

Primary No.: P-07-000276
Trinomial: CA-CCO-000505
Name: The Pinella Site
Other IDs:

Type	*Name*
Resource Name	The Pinella Site

Cross-refs:

Attributes

Resource type: Site
Age: Prehistoric
Information base: Survey, Other
Attribute codes: AP15 (Habitation debris)
Disclosure: Not for publication
Collections: Unknown
Accession no(s):
Facility:

General notes

Recording events

Date	*Recorder(s)*	*Affiliation*	*Notes*
2/24/1985	Peter Banks	California Archaeological Consultants, Inc.	

Associated reports

Report No.	*Year*	*Title*	*Affiliation*
S-007131	1985	An Archaeological Reconnaissance of the Appian Way Widening Project: Phase II, El Sobrante, Contra Costa County, California.	California Archaeological Consultants, Inc.
S-008186		VOIDED S# - additional citation 'a' of S-7131.	
S-031545	2006	Phase II - Cultural Resources Evaluation of an Approximately 1.2-acre Parcel Located at 4441 Appian Way, City of El Sobrante, Contra Costa County, California (letter report)	Archeo-Tec

Location information

County: Contra Costa
USGS quad(s): Richmond
Address:
PLSS:
UTMs: Zone 10 556940mE 4202580mN NAD27

Management status

Database record metadata

	Date	*User*	
Entered:	4/1/2005	icrds	
Last modified:	7/6/2017	hagell	
IC actions:	*Date*	*User*	*Action taken*
	4/1/2005	jay	Appended records from discontinued ICRDS.
	7/6/2017	hagell	added affiliation
	1/11/2016	poskar	Shape moved to Res Approx because the site boundary is not defined.

Record status: Verified

Resource Detail: P-07-000839

Identifying information

Primary No.: P-07-000839
Trinomial:
Name: Lu Farm Complex
Other IDs:

Type	*Name*
Resource Name	Lu Farm Complex
Other	4439 Appian Way

Cross-refs:

Attributes

Resource type: Building, Structure
Age: Historic
Information base: Survey
Attribute codes: HP33 (Farm/ranch)
Disclosure: Not for publication
Collections: No
Accession no(s):
Facility:

General notes

Recording events

	Date	*Recorder(s)*	*Affiliation*	*Notes*
a	10/20/1999	Mike Newland, Stacy Schneyder, Noelle Storey	Anthropological Studies Center, Sonoma State University	

Associated reports

Report No.	*Year*	*Title*	*Affiliation*
S-022273	1999	A Cultural Resources Study of 4439 Appian Way (APN# 425-110-021), El Sobrante, Contra Costa County, California	Anthropological Studies Center, Sonoma State University

Location information

County: Contra Costa
USGS quad(s): Richmond
Address:

Address	*City*	*Assessor's parcel no.*	*Zip code*
4439 Appian Way	El Sobrante	425-110-021	94803

PLSS:
UTMs: Zone 10 561125mE 4202750mN NAD83

Management status

Database record metadata

	Date	*User*
Entered:	4/1/2005	icrds
Last modified:	1/12/2016	simsa

IC actions:

Date	*User*	*Action taken*
1/11/2016	poskar	Boundary changed 1-11-2016 based off parcel layer.
7/10/2001	AOLPJ	Primary number 07-000839 assigned.
4/1/2005	jay	Appended records from discontinued ICRDS.

Record status: Verified

Report Detail: S-007131

Identifiers

Report No.: S-007131
Other IDs:
Cross-refs: See also S-006592
See also S-008186

Citation information

Author(s): Peter Banks
Year: 1985 (Feb)
Title: An Archaeological Reconnaissance of the Appian Way Widening Project: Phase II, El Sobrante, Contra Costa County, California.
Affliliation: California Archaeological Consultants, Inc.
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: c. 1 li. mi.
Disclosure: Not for publication
Collections: No

Sub-desig.: a
Author(s): Peter Banks
Year: 1986 (Apr)
Title: Subsurface Archaeological Investigations for the Appian Way Widening Project, El Sobrante, Contra Costa County, California
Affiliation: California Archaeological Consultants, Inc.
Report type(s): Archaeological, Excavation
Inventory size:
No. pages:
Disclosure: Not for publication
Collections: No
PDF Pages: 18-29

Sub-desig.: b
Author(s):
Year: 1986 (Jul)
Title: Historic Property Survey Report for Appian Way Road Widening and Improvement Project
Affiliation: Cole/Mills Associates
Report type(s): Architectural/historical, Field study
Inventory size:
No. pages:
Disclosure: Unrestricted
Collections: No
PDF Pages: 30-42

Report Detail: S-007131

Sub-desig.: c
Author(s):
Year: 1986 (Jul)
Title: Historic Structures Survey Report for Appian Way Road Widening and Improvement Project
Affiliation: Cole/Mills Associates
Report type(s): Architectural/historical, Field study
Inventory size:
No. pages:
Disclosure: Unrestricted
Collections: No
PDF Pages: 43-85

Sub-desig.: d
Author(s): Peter Banks
Year: 1986 (Nov)
Title: Subsurface Archaeological Investigations for the Appian Way Widening Project, El Sobrante, Contra Costa County, California (Revised)
Affiliation: California Archaeological Consultants, Inc.
Report type(s): Archaeological, Excavation
Inventory size:
No. pages:
Disclosure: Not for publication
Collections: No
PDF Pages: 86-101

General notes

A historic barn was within the project area. It was not determined to be historically significant. According to additional citations 'a' and 'd', CA-CCO-505 (P-07-000276) did not appear to extend into the project area.

Associated resources

Primary No.	*Trinomial*	*Name*
P-07-000097	CA-CCO-000155	El Sobrante Library Site
P-07-000276	CA-CCO-000505	The Pinella Site

No. resources: 2
Has informals: Yes

Location information

County(ies): Contra Costa
USGS quad(s): Richmond
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	4/7/2005	nwic-main
Last modified:	3/19/2020	rinerg

IC actions:

Date	*User*	*Action taken*
4/7/2005	jay	Appended records from NWICmain bibliographic database.
2/3/2020	hagell	added additional citations 'a' - 'd' from Cole/Mills and CAC from 1986
2/4/2020	mcgurlm	Updated citation "PDFpage" #s; Updated GIS feature for additional citation (subsumed and voided S-8186); Changed record status from "Verified";

Record status: Verified

Report Detail: S-011534

Identifiers

Report No.: S-011534

Other IDs:

Type	*Name*
Submitter	ARS 88-65

Cross-refs:

Citation information

Author(s): Katherine Flynn
Year: 1988 (Aug)
Title: Archaeological survey of property located at 4247 Appian Way, El Sobrante, Contra Costa County (letter report)
Affliliation: Archaeological Resource Service
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: c 0.5 ac
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Address:

Address	*City*	*Assessor's parcel no.*	*Zip code*
4247 Appian Way	El Sobrante		

PLSS:

Database record metadata

	Date	*User*
Entered:	4/7/2005	nwic-main
Last modified:	7/3/2017	moored

IC actions:

Date	*User*	*Action taken*
4/7/2005	jay	Appended records from NWICmain bibliographic database.

Record status: Verified

Report Detail: S-001999

Identifiers

Report No.: S-001999
Other IDs:
Cross-refs:

Citation information

Author(s): Michael J. Baldrica
Year: 1980 (Apr)
Title: An Archaeological Survey of the Kraus Property, Contra Costa County, California.
Affliliation: The Cultural Resources Facility, Sonoma State University
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: c 2 ac
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Address: Address	City	Assessor's parcel no.	Zip code
4350 San Pablo Dam Road	El Sobrante		

PLSS:

Database record metadata

	Date	User
Entered:	4/7/2005	nwic-main
Last modified:	7/6/2017	hagell

IC actions: Date	User	Action taken
4/7/2005	jay	Appended records from NWICmain bibliographic database.
7/6/2017	hagell	added address

Record status: Verified

Report Detail: S-006577

Identifiers

Report No.: S-006577
Other IDs:
Cross-refs:

Citation information

Author(s): Suzanne Baker
Year: 1984 (Mar)
Title: Archaeological Reconnaissance of the El Sobrante Condominiums Development, Contra Costa County, California
Affliliation: Archaeological Consultants
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: 1.6 ac.
Disclosure: Not for publication
Collections: No

General notes

Concrete foundations, barn & shed remains, and metal pipes were noted on the property.

Associated resources

No. resources: 0
Has informals: Yes

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Address:

Address	*City*	*Assessor's parcel no.*	*Zip code*
1271 Appian Way	El Sobrante		

PLSS:

Database record metadata

	Date	*User*
Entered:	4/7/2005	nwic-main
Last modified:	7/6/2017	hagell

IC actions:

Date	*User*	*Action taken*
4/7/2005	jay	Appended records from NWICmain bibliographic database.
6/30/2017	neala	added informal resources & general note
7/6/2017	hagell	added address.

Record status: Verified

Report Detail: S-006592

Identifiers

Report No.: S-006592
Other IDs:
Cross-refs: See also S-007131

Citation information

Author(s): Peter M. Banks
Year: 1984 (May)
Title: An Archaeological Reconnaissance of the Appian Way Widening Project, El Sobrante, Contra Costa County, California.
Affliliation: California Archaeological Consultants, Inc.
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: c. 1 li. mi.
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	4/7/2005	nwic-main
Last modified:	2/3/2020	hagell

IC actions:	*Date*	*User*	*Action taken*
	4/7/2005	jay	Appended records from NWICmain bibliographic database.

Record status: Verified

Report Detail: S-007988

Identifiers

Report No.: S-007988
Other IDs:
Cross-refs:

Citation information

Author(s): Robert I. Orlins
Year: 1986 (Mar)
Title: A Cultural Resource Investigation for the San Pablo Dam Road Widening Project, El Sobrante, Contra Costa County, California.
Affliliation: California Archaeological Consultants, Inc.
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: 0.7 li mi
Disclosure: Not for publication
Collections: No

General notes

Associated resources

	Primary No.	*Trinomial*	*Name*
	P-07-000068	CA-CCO-000126	[none]

No. resources: 1
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	4/7/2005	nwic-main
Last modified:	6/30/2017	neala

IC actions:	*Date*	*User*	*Action taken*
	4/7/2005	jay	Appended records from NWICmain bibliographic database.
	6/30/2017	neala	added resource

Record status: Verified

Report Detail: S-008100

Identifiers

Report No.: S-008100
Other IDs:
Cross-refs:

Citation information

Author(s): Suzanne Baker
Year: 1986 (May)
Title: Archaeological Reconnaissance of the Tyson Property, Parcel #425-170-025, El Sobrante, Contra Costa County.
Affliliation: Archaeological Consultants
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: c 0.5 ac
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Address:	*Address*	*City*	*Assessor's parcel no.*	*Zip code*
		El Sobrante	425-170-025	

PLSS:

Database record metadata

	Date	*User*
Entered:	4/7/2005	nwic-main
Last modified:	7/6/2017	hagell

IC actions:	*Date*	*User*	*Action taken*
	4/7/2005	jay	Appended records from NWICmain bibliographic database.
	7/6/2017	hagell	added month, APN

Record status: Verified

Report Detail: S-008852

Identifiers

Report No.: S-008852
Other IDs:
Cross-refs:

Citation information

Author(s): Jack Miller and Suzanne Baker
Year: 1986 (Sep)
Title: Archaeological Reconnaissance of the El Sobrante Partnership Property, El Sobrante, California
Affliliation: Archaeological Consultants
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size:
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Address: Address	City	Assessor's parcel no.	Zip code
4630 Appian Way	El Sobrante		

PLSS:

Database record metadata

	Date	User
Entered:	4/7/2005	nwic-main
Last modified:	7/3/2017	moored

IC actions: Date	User	Action taken
4/7/2005	jay	Appended records from NWICmain bibliographic database.

Record status: Verified

Report Detail: S-009687

Identifiers

Report No.: S-009687

Other IDs:	*Type*	*Name*
	Submitter	ARS 87-30

Cross-refs:

Citation information

Author(s): Katherine Flynn
Year: 1987 (Jul)
Title: Archaeological survey of lot at 4221 San Pablo Dam Rd., El Sobrante, Contra Costa County (Co. File No. 3027-87, APN 425-160-008) (letter report)
Affliliation: Archaeological Resource Service
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: c 1 ac
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Address:	*Address*	*City*	*Assessor's parcel no.*	*Zip code*
	4221 San Pablo Dam rd.	El Sobrante	425-160-008	

PLSS: T2N R4E

Database record metadata

	Date	*User*
Entered:	4/7/2005	nwic-main
Last modified:	7/5/2017	rinerg

IC actions:	*Date*	*User*	*Action taken*
	4/7/2005	jay	Appended records from NWICmain bibliographic database.
	7/5/2017	rinerg	the parcel APN in the Contra Costa county assessor's data appears to be '425-160-009'

Record status: Verified

Report Detail: S-010228

Identifiers

Report No.: S-010228
Other IDs:
Cross-refs:

Citation information

Author(s): Alice F. Wood
Year: 1988 (Aug)
Title: The Archaeological Monitoring of Excavations for Three Electrical Vaults on Appian Way, El Sobrante, Contra Costa County, California
Affliliation: California Archaeological Consultants, Inc.
No. pages:
No. maps:
Attributes: Archaeological, Field study, Monitoring
Inventory size:
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Address:	*Address*	*City*	*Assessor's parcel no.*	*Zip code*
	Appian Way	El Sobrante		

PLSS:

Database record metadata

	Date	*User*
Entered:	4/7/2005	nwic-main
Last modified:	7/5/2017	rinerg

IC actions:	*Date*	*User*	*Action taken*
	4/7/2005	jay	Appended records from NWICmain bibliographic database.

Record status: Verified

Report Detail: S-011533

Identifiers

Report No.: S-011533

Other IDs:

Type	*Name*
Submitter	ARS 88-68

Cross-refs:

Citation information

Author(s): Katherine Flynn
Year: 1988 (Sep)
Title: Archaeological evaluation of 4158 Santa Rita Road, El Sobrante, Contra Costa Co., Subdivision MS 7-88 (letter report)
Affliliation: Archaeological Resource Service
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: c 0.5 ac
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Address:

Address	*City*	*Assessor's parcel no.*	*Zip code*
4158 Santa Rita Road	El Sobrante	425-170-018	

PLSS:

Database record metadata

	Date	*User*
Entered:	4/7/2005	nwic-main
Last modified:	7/5/2017	rinerg

IC actions:

Date	*User*	*Action taken*
4/7/2005	jay	Appended records from NWICmain bibliographic database.

Record status: Verified

Report Detail: S-012297

Identifiers

Report No.: S-012297

Other IDs:	*Type*	*Name*
	Submitter	ARS 90-73

Cross-refs:

Citation information

Author(s): Katherine Flynn
Year: 1991 (Jan)
Title: Archaeological evaluation of 4201 Garden Lane, El Sobrante, Contra Costa Co., Project No. MS 192-90 (letter report)
Affliliation: Archaeological Resource Service
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: c 0.5 ac
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Address:	*Address*	*City*	*Assessor's parcel no.*	*Zip code*
	4201 Garden Lane	El Sobrante	425-122-007 425-122-012 425-122-011	

PLSS:

Database record metadata

	Date	*User*
Entered:	4/7/2005	nwic-main
Last modified:	7/5/2017	rinerg

IC actions:	*Date*	*User*	*Action taken*
	4/7/2005	jay	Appended records from NWICmain bibliographic database.

Record status: Verified

Report Detail: S-022273

Identifiers

Report No.: S-022273

Other IDs:

Type	*Name*
Submitter	Project 50001-109/99

Cross-refs:

Citation information

Author(s): Stacey Schneyder
Year: 1999 (Oct)
Title: A Cultural Resources Study of 4439 Appian Way (APN# 425-110-021), El Sobrante, Contra Costa County, California
Affliliation: Anthropological Studies Center, Sonoma State University
No. pages:
No. maps:
Attributes: Archaeological, Architectural/historical, Field study
Inventory size:
Disclosure: Not for publication
Collections: No

General notes

Associated resources

Primary No.	*Trinomial*	*Name*
P-07-000839		Lu Farm Complex

No. resources: 1
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Address:

Address	*City*	*Assessor's parcel no.*	*Zip code*
4439 Appian Way	El Sobrante	425-110-021	

PLSS:

Database record metadata

	Date	*User*
Entered:	4/7/2005	nwic-main
Last modified:	7/7/2017	hagell

IC actions:

Date	*User*	*Action taken*
4/7/2005	jay	Appended records from NWICmain bibliographic database.
1/4/2016	castrom	update DB
1/11/2016	poskar	Report was mapped incorrectly based on the address, APN, and report content. Submitter's map was also incorrect.

Record status: Verified

Report Detail: S-027935

Identifiers

Report No.: S-027935
Other IDs:
Cross-refs:

Citation information

Author(s): John Holson
Year: 2004 (Jan)
Title: Archaeological Survey and Record Search Results for 4150 Appian Way, El Sobrante (APN 425-170-030) (letter report)
Affliliation: Pacific Legacy, Inc.
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: c 3 ac
Disclosure: Not for publication
Collections: No

General notes

Associated resources

No. resources: 0
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Address: Address	City	Assessor's parcel no.	Zip code
4150 Appian Way	El Sobrante	425-170-30	

PLSS: T1N R4W

Database record metadata

	Date	User
Entered:	4/7/2005	nwic-main
Last modified:	7/3/2017	moored

IC actions: Date	User	Action taken
4/7/2005	jay	Appended records from NWICmain bibliographic database.

Record status: Verified

Report Detail: S-031545

Identifiers

Report No.: S-031545
Other IDs:
Cross-refs:

Citation information

Author(s): Allen G. Pastron
Year: 2006 (Mar)
Title: Phase II - Cultural Resources Evaluation of an Approximately 1.2-acre Parcel Located at 4441 Appian Way, City of El Sobrante, Contra Costa County, California (letter report)
Affliliation: Archeo-Tec
No. pages:
No. maps:
Attributes: Archaeological, Architectural/historical, Excavation, Field study
Inventory size: c 1.2 ac
Disclosure: Not for publication
Collections: Yes

General notes

Associated resources

	Primary No.	*Trinomial*	*Name*
	P-07-000276	CA-CCO-000505	The Pinella Site

No. resources: 1
Has informals: Yes

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Address:	*Address*	*City*	*Assessor's parcel no.*	*Zip code*
	4441 Appian Way	El Sobrante	425-110-022 425-110-023 425-110-024	

PLSS:

Database record metadata

	Date	*User*
Entered:	6/27/2006	lisa
Last modified:	7/6/2017	hagell

IC actions:	*Date*	*User*	*Action taken*
	1/11/2016	poskar	Changed shape based on parcel layer and report map.

Record status: Verified

Report Detail: S-044169

Identifiers

Report No.: S-044169

Other IDs:	*Type*	*Name*
	Other	Santa Rita and Penny GPRP ED El Sobrante
	Agency Nbr	PM Number: 30956567

Cross-refs:

Citation information

Author(s): Alex DeGeorgey and Devin Snyder
Year: 2013 (Jun)
Title: Cultural Resources Constraints Report: Santa Rita and Penny GPRP ED El Sobrante
Affliliation: Alta Archaeological Consulting
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size:
Disclosure: Not for publication
Collections: No

General notes

Report erroneously mentions Las Trampas, Diablo, and Cuttings Wharf quads, NWIC has verified that project was located in Richmond quad.

Associated resources

No. resources: 0
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	6/18/2014	castrom
Last modified:	7/7/2015	mikulikc

IC actions:	*Date*	*User*	*Action taken*
	6/25/2015	simsa	Corrected quad map.

Record status: Verified

Report Detail: S-051734

Identifiers

Report No.: S-051734

Other IDs:

Type	*Name*
Agency Nbr	HSIPL-5928(133)

Cross-refs:

Citation information

Author(s): Adrian Whitaker
Year: 2018 (Nov)
Title: Historic Property Survey Report for the San Pablo Dam Road Sidewalk Project, El Sobrante, Contra Costa County, California, 4-CCO-HSIPL-5928(133)
Affliliation: Far Western Anthropological Research Group, Inc.
No. pages:
No. maps:
Attributes: Architectural/historical, Management/planning
Inventory size:
Disclosure: Not for publication
Collections: No

Sub-desig.: a
Author(s): Adrian Whitaker, Kaely Colligan, Naomi Scher, Jack Meyer, and Jeffrey Rosenthal
Year: 2018 (Jul)
Title: Archaeological Survey Report for the San Pablo Dam Road Sidewalk Project, El Sobrante, Contra Costa County, California
Affiliation: Far Western Anthropological Research Group, Inc.
Report type(s): Archaeological, Field study
Inventory size:
No. pages:
Disclosure: Not for publication
Collections: No
PDF Pages: 7-67

Sub-desig.: b
Author(s): Ashley Parker, Adrian Whitaker, and Naomi Acher
Year: 2018 (Aug)
Title: Extended Phase I Report for the San Pablo Dam Road Sidewalk Project, El Sobrante, Contra Costa County, California
Affiliation: Far Western Anthropological Research Group, Inc.
Report type(s): Archaeological, Excavation, Field study
Inventory size:
No. pages:
Disclosure: Not for publication
Collections: No
PDF Pages: 68-90

General notes

Associated resources

Primary No.	*Trinomial*	*Name*
P-07-000068	CA-CCO-000126	[none]

No. resources: 1
Has informals: No

Location information

County(ies): Contra Costa
USGS quad(s): Richmond

Report Detail: S-051734

	Address	City	Assessor's parcel no.	Zip code
Address:	San Pablo Dam Road	El Sobrante		
PLSS:				

Database record metadata

	Date	User
Entered:	1/23/2019	Vickeryn
Last modified:	11/27/2019	rinerg

IC actions:	Date	User	Action taken
	1/23/2019	Vickeryn	Added additional citations 'a' and 'b'. Unprocessed resources-1 update of P-07-000068 in additional citation 'b'. Shapefiles for additional citations 'a' and 'b'.
	2/15/2019	murazzoj	Updated resource, awaiting GIS.

Record status: Verified

APPENDIX 2: NAHC CORRESPONDENCE

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

December 15, 2023

Daneil Shoup
Archaeological/Historical Consultants

Via Email to: daniel.shoup@ahc-heritage.com

Re: 23-64 4301 Appian Way Project, Contra Costa County

To Whom It May Concern:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information submitted for the above referenced project. The results were positive. Please contact the tribes on the attached list for information. Please note that tribes do not always record their sacred sites in the SLF, nor are they required to do so. A SLF search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with a project's geographic area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites, such as the appropriate regional California Historical Research Information System (CHRIS) archaeological Information Center for the presence of recorded archaeological sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. Please contact all of those listed; if they cannot supply information, they may recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Cody.Campagne@nahc.ca.gov.

Sincerely,

Cody Campagne

Cody Campagne
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Contra Costa County
12/15/2023

Tribe Name	Contact Person	Contact Address	Cultural
Amah MutsunTribal Band of Mission San Juan Bautista	Irene Zwierlein, Chairperson	3030 Soda Bay Road Lakeport, CA, 95453	Costanoan
Confederated Villages of Lisjan Nation	Deja Gould, Language Program Manager	10926 Edes Ave Oakland, CA, 94603	Bay Miwok Ohlone
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Guidiville Rancheria of California	Bunny Tarin, Tribal Administrator	PO Box 339 Talmage, CA, 95481	Pomo
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The Ohlone Indian Tribe	Vincent Medina, Cultural Leader	17365 Via Del Rey San Lorenzo, CA, 94580	Bay Miwok Ohlone
The Ohlone Indian Tribe	Andrew Galvan, Chairperson	P.O. Box 3388 Fremont, CA, 94539	Bay Miwok Ohlone
The Ohlone Indian Tribe	Desiree Vigil, THPO	259 Winwood Avenue Pacifica, CA, 94044	Bay Miwok Ohlone

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed 23-64 4301 Appian Way Project, Contra Costa County.

4301 Appian Way Development Project, El Sobrante, California
Biological Resources Assessment

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September 2, 2025

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Abbreviations

ACE	Terrestrial Habitat Connectivity Mapper
BIOS	Biological Information and Observation System
BSA	Biological Study Area
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Code
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
CWB	California Water Board
DPS	Distinct Population Segment
EPA	Environmental Protection Agency
FESA	Federal Endangered Species Act
IPaC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Services
NWI	National Wetlands Inventory
PAD	California Fish Passage Assessment Database
Project	4301 Appian Way Development Project
RWQCB	Regional Water Quality Control Board
SSC	Species of Special Concern
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

1 Introduction and Project Description

1.1 Introduction

The purpose of this report is to provide the results of field surveys and desktop analyses performed to determine if sensitive habitats, special-status species and their habitat, and other biological resources could occur in the 4301 Appian Way Development Project, El Sobrante (Project) area. Regulations protecting relevant resources are outlined in this document in order to satisfy requirements imposed by the California Environmental Quality Act (CEQA) and the National Environmental Policy Act. The Project is located in Contra Costa County at latitude 37.969047 and longitude -122.308389. The Project location is shown in Appendix A, Figure 1.

This report contains descriptions of the environmental regulations relevant to the Project, as well as the methods and results of research and surveys performed and determinations made regarding the presence or absence of special-status plants and wildlife, as well as the presence, location, and extent of any sensitive natural communities and aquatic resources within or adjacent to the footprint of the Project.

1.2 Project Description

The purpose of the project is to demolish an existing house and build an apartment complex.

1.3 Biological Study Area

The Biological Study Area (BSA) was defined as the footprint of the proposed Project and surrounding area that may be subject to direct or indirect effects resulting from the construction of the Project. Figure 2 of Appendix A shows the extent of the Project area. The BSA included a 200 foot buffer.

The BSA is located in the southern portion of the unincorporated community of El Sobrante in a high density commercial/residential area. Appian Creek, a tributary to San Pablo Creek runs in a north south configuration along the western property boundary. There is one structure, a two-story single-family home on the property.

2 Regulatory Setting

This section describes the federal, state, local, and other regulations that may apply to biological resources that occur or have potential to occur within the project area.

2.1 Federal

2.1.1 Endangered Species Act, Section 7

The Federal Endangered Species Act (FESA) was established to protect imperiled fish, wildlife and plants and to take necessary measures to prevent them from going extinct. Based on scientific research, a species may be listed as threatened or endangered, and whether a species should be considered a candidate for listing until more information is evaluated. In addition, a species could be removed from listing if sufficient evidence exists that the species is no longer in danger of extinction. FESA requires not only the protection of listed species but also the conservation of species-specific habitat they rely on for survival. Section 7 of the FESA requires that federal agencies consult with the agencies responsible for enforcing FESA if a project under their review has any potential to affect federally listed species or critical habitat. The U.S. Fish and Wildlife Service (USFWS) oversees the protection of terrestrial and freshwater aquatic species. The National Marine Fisheries Service (NMFS) oversees the protection of oceanic species, anadromous fish, and marine mammals.

2.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 prohibits the take (killing, capturing, selling, trading, or transport) of protected migratory bird species, including their eggs, nests, and young, without prior authorization by the USFWS. The MBTA applies to migratory bird species that are native to the United States or U.S. territories and are present as a result of natural biological or ecological processes.

2.1.3 CWA Section 404

The Clean Water Act (CWA) serves as the primary federal law protecting the quality of the nation's wetlands and surface waters. Under Section 404 of the CWA, the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (USEPA) regulate the discharge of dredged and fill materials into the waters of the United States. The definition of waters of the United States, as amended by the USEPA and USACE on September 8, 2023, includes: 1) waters used for commerce and subject to tides; 2) interstate waters and wetlands; 3) other waters such as intrastate lakes, rivers, streams (including intermittent streams), and wetlands; 4) impoundments of waters; 5) tributaries of waters that are relatively permanent, standing or continuously flowing bodies of water; 6) territorial seas; and 7) wetlands adjacent to waters that have a continuous surface connection with navigable waters and tributaries with relatively permanent or continuous flows to navigable waters. Aquatic features no longer protected under the CWA Section 404 following September 8, 2023, amendment to the definition include 1) ephemeral drainages that are not sustained by a groundwater source, and 2) isolated wetlands that have no surface connectivity to navigable waters and/or tributaries with relatively continuous connectivity to navigable waters.

The CWA defines wetlands as a subset of waters of the United States that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR 328.3[b]; 40 CFR 230.3[t]).

2.2 State

2.2.1 California Endangered Species Act

The California Endangered Species Act (CESA) protects plant and wildlife species at risk of extinction. CESA-listed species may not be imported into the state, exported out of the state, taken, possessed, purchased, or sold without proper authorization via permitting through California Department of Fish and Wildlife (CDFW). Species may be designated as endangered or threatened after a formal listing process by the California Fish and Game Commission. Only the individuals are protected, not their habitat. CDFW must evaluate a proposed project for its potential impacts to species under their jurisdiction.

2.2.2 California Fish and Game Code

2.2.2.1 Fully Protected Species

Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code (CFGC) define the classification of Fully Protected, providing protection for animals that are rare or faced with possible extinction. Fully Protected species may not be taken or possessed except with an authorization from CDFW. Many fully protected species are also listed under CESA as threatened or endangered.

2.2.2.2 Lake and Streambed Alteration Agreements

Section 1602 of the CFGC requires an entity to notify the CDFW prior to commencing an activity that will substantially divert or obstruct the natural flow of or substantially change or use any material from the bed, channel, or bank of any river, stream or lake, or deposit or dispose of debris, waste or other material where it may pass into any river, stream or lake. Vegetation associated with the health of aquatic features such as riparian corridors, are also protected. Following the notification, the CDFW will determine whether or not a Lake or Streambed Alteration Agreement is necessary and if so, the agreement will include measures, often including mitigation necessary to protect the resource(s) with potential to be affected.

2.2.2.3 Bird/Raptor Protection in the Fish and Game Code

Section 3503 of the CFGC makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Additionally, Section 3503.5 of the CFGC makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey). CDFW is the state agency responsible for enforcing the protection of birds and places the responsibility of ensuring that a project has no take on the project proponent who must demonstrate in advance what measures will be taken to avoid take through the CEQA process and permitting process.

2.2.3 Clean Water Act Section 401/Porter-Cologne Water Quality Control Act

Waters of the State are regulated by the Regional Water Quality Control Board (RWQCB) under the State Water Quality Certification Program, which regulates discharges of dredged and fill material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. The State Water Code defines "waters of the State" broadly to include "any surface water or groundwater, including saline waters, within the boundaries of the state." Waters of the State also includes all "waters of the U.S." (California Water Boards [CWB] 2021). Under this definition, isolated wetlands that may not be subject to regulations under federal law are considered waters of the State. Additionally, the California RWQCB adopted State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (CWB 2021) and uses the methods of delineation prescribed in the USACE wetlands delineation manuals (USACE 1987; USACE 2008).

The RWQCB protects all waters in its regulatory scope but has special responsibility for isolated wetlands and headwaters that may not be regulated by other programs (such as Section 404 of the CWA). Projects that require a Section 404 CWA permit or fall under other federal jurisdiction and have the potential to impact waters of the State are required to obtain a Section 401 Water Quality Certification.

The RWQCB defines an area as a wetland if, under normal circumstances, 1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; 2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and 3) the area's vegetation is dominated by hydrophytic vegetation or the area lacks vegetation (CWB 2021).

2.3 Local Plans and Policies

El Sobrante is an unincorporated community under the jurisdiction of Contra Costa County. Chapter 816-68002 of the Contra Costa County Ordinance Code requires that "any person proposing to trench, grade or fill within the dripline of any protected tree[1] or cut down, destroy, trim by topping or remove any protected tree shall apply to the Department for a tree permit, not

[1] A protected tree on all properties within the unincorporated areas of the county is defined as any one of the following:

A) Where the tree to be cut down, destroyed or trimmed by topping is adjacent to or part of a riparian, foothill woodland or oak savanna area, or part of a stand of four or more trees, measures twenty inches or larger in circumference (approximately 6.5 inches in diameter) as measured four and one-half feet from ground level, and is included in the following list of indigenous trees: bigleaf maple (*Acer macrophyllum*), box elder (*A. negundo*), California buckeye (*Aesculus californica*), white alder (*Alnus Rhombifolia*), madrone (*Arbutus menziesii*), toyon (*Heteromeles arbutifolia*), California black walnut (*Juglans Hindsii*), California juniper (*Juniperus californica*), tanoak or tanbark oak (*Lithocarpus densiflora*), knobcone pine (*Pinus attenuata*), digger pine (*Pinus sabiniana*), California sycamore (*Plantanus racemosa*), Fremont cottonwood (*Populus fremontii*), black cottonwood (*Populus trichocarpa*), California or coast live oak (*Quercus agrifolia*), canyon live oak (*Q. chrysolepis*), blue oak (*Q. douglasii*), California black oak (*Q. kelloggii*), valley oak (*Q. lobata*), interior live oak (*Q. wislizenii*), yellow willow (*Salix lasiandra*), red willow (*S. laevigata*), arroyo willow (*S. lasiolepis*), coast red elderberry (*Sambucus callicarpa*), coast redwood (*Sequoia sempervirens*), California bay or laurel) (*Umbellularia californica*).

less than ten days prior to the proposed tree removal or tree alterations" (Contra Costa County 2025).

Contra Costa County Ordinance Code, Chapter 9, Division 914 provides details on setbacks from creeks and drainages. The code generally states that, depending on the depth of the creek, structures or improvements along a natural or unimproved channel must be 30 to 50 feet away from the top of bank. A licensed civil engineer or geotechnical engineer must be engaged to provide calculations for submittal to the Building Inspection Department. (Contra Costa County 2025).

3 Methods

This section describes the methodology used to conduct research and field surveys.

3.1 Background Research

Desktop and other background research were conducted including aerial imagery, databases, lists and other peer-review literature. The databases and other primary sources included the following:

- California Natural Diversity Database (CNDDB). Using a 5-mile-radius buffer around the project site, a list of known plant occurrences, wildlife occurrences, and CDFW-designated sensitive natural communities was generated (CDFW 2025a) (Appendix B).
- California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants of California (CNPS 2025) (Appendix B).
- USFWS Information for Planning and Consultation (IPaC) database list (USFWS 2025a) (Appendix B).
- USFWS National Wetlands Inventory (USFWS 2025b).

3.1.1 Plants

For the purposes of this report, special-status plant species were defined as species with federal or state listing of threatened or endangered, and/or a California Rare Plant Rank (CRPR) of 1A, 1B, 2A, or 2B. A full list of plants that were evaluated are included in Table 1.

3.1.2 Wildlife

3.1.2.1 Special-Status Wildlife Species

For the purposes of this report, special-status wildlife species include:

- Species listed as endangered or threatened, or as candidate for listing under the FESA, and/or the California Endangered Species Act (CESA)
- CDFW Species of Special Concern (SCC) and Fully Protected species
- Birds protected under the Bald and Golden Eagle Protection Act or the MBTA.

3.1.2.2 Critical Habitat

Critical habitat is defined by the USFWS as the geographic areas that contain the physical or biological features that are essential to the conservation of an endangered or threatened species. The USFWS Critical Habitat for Threatened and Endangered Species Mapper (USFWS 2025c) and the National Oceanic and Atmospheric Administration Fisheries West Coast Region Species and Habitat Map (NOAA 2025) were reviewed for the boundaries of critical habitat in the vicinity of the Project. The BSA was compared with the online mapping data from these resources to determine whether any known critical habitat areas intersected the BSA.

3.1.2.3 Wildlife Movement and Migration Corridors

The CDFW Terrestrial Habitat Connectivity (ACE) (CDFW 2025b) online BIOS map was utilized to determine what type of wildlife movement corridors have been mapped for the Project region. ACE

connectivity ranks 1-5 are based upon the importance of connectivity which follows a set criterion. The CDFW California Fish Passage Assessment Database (PAD) (CDFW 2025c) online BIOS map was utilized to determine what fish passage barriers exist within the Project region that could influence fish migration.

3.1.3 Sensitive Natural Communities

Natural communities listed on the California Natural Community List with ranks of S1-S3 are considered Sensitive Natural Communities to be addressed in the CEQA environmental review process.

3.1.4 Wetlands and Waters

The following resources were reviewed prior to conducting field investigations to obtain information on wetlands and other water features that may occur in the BSA.

- United States Geological Survey 7.5-minute topographic quadrangle map, Richmond
- National Wetlands Inventory mapper (USFWS, 2025b)
- Google Earth Pro Aerial photographs from 1974 through 2025

3.2 Field Surveys

A reconnaissance level field survey was conducted on August 14, 2025 by BioMaAS senior biologist Sandra Etchell, who specializes in plant, wildlife, aquatic resource identification, and biological resource regulation.

3.2.1 Vegetation Communities

Vegetation communities were identified by determining which species of plant(s) were dominant in each of the herb, shrub, and tree strata. This information was then used to reference the CNPS Manual of California Vegetation to determine which alliance best represented the observed vegetation community. The boundaries of these vegetation communities were then mapped using a combination of field notes, GPS field data, and aerial imagery.

3.2.2 Floristic Surveys

Reconnaissance level floristic surveys were conducted by Sandra Etchell at the time of the August 14, 2025, site visit. Species observed within the project area were recorded.

3.2.3 Wildlife Surveys

Wildlife surveys were conducted during the reconnaissance level survey. All species observed within the project area were recorded.

3.2.4 Sensitive Natural Communities

During surveys of the BSA, all habitat types, natural or developed, were assessed for species composition. The information collected in the field, occurrence data for sensitive natural communities, and aerial imagery were used to generate a map of all habitat types within the BSA. Vegetation communities present within the BSA were then classified utilizing the CDFW California Wildlife Habitat Relationships System (CDFW 2025d). The Sensitive Natural Communities List

(CDFW 2025e) was referenced to determine if any of the natural communities present within the BSA are ranked as a Sensitive Natural Community.

3.2.5 Wetland Delineation

If potential jurisdictional aquatic features were observed in the BSA, they were assessed based on federal and state guidelines and regulations, including Sections 404 and 401 of the CWA, and the Porter-Cologne Water Quality Control Act. If potential wetlands were observed, delineations would be performed in accordance with the United States Army Corps of Engineers (USACE) guidelines and the September 8, 2023 final rule amendment to the definition of "waters of the United States" by the EPA and the USACE to conform with the Supreme Court Decision of Sacket v. EPA.

4 Results

4.1 Vegetation Communities

There were three vegetation communities found within the BSA; urban, riparian, and non-native grassland. These communities are described in the following section. Refer to Figure 2 of Appendix A for a map showing where these vegetation communities and where they occur within the BSA. The vegetation communities found within the BSA are described in the following sections.

4.1.1 Urban

Urban vegetation communities include tree grove, street strip, shade tree/lawn, lawn, and shrub vegetation primarily comprised of exotic landscape species. Urban landscapes are typically designed and structured around residential and recreational developments with manicured lawn being the most uniform vegetative unit of the California urban habitat. Urban development contains a high percentage of paved areas however biomass productivity is greater than most natural areas due to the application of irrigation and fertilizers. Wildlife species richness and diversity is low particularly in heavily developed areas however urban vegetation communities provide habitat for a variety of bird species, and wildlife adapted to living in close proximity to humans. Wildlife species that frequently occur in urban vegetation communities consistent with the BSA include house sparrow (*Passer domesticus*), Eurasian collared-dove (*Streptopelia decaocto*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*) and mule deer (*Odocoileus virginianus*) (McBride and Reid 1988).

4.1.2 Riparian

Riparian corridors often consist of a diversity of plants and provide a range of benefits to a variety of wildlife offering forage, water, thermal and escape cover, nesting/breeding, migration and dispersal corridors. Riparian plant communities are categorized by the dominant trees within the vegetation community. Riparian habitats are found in association with rivers, wetlands, and streams (Grenfell 1988). The riparian corridor within the BSA has a sparse overstory of native trees consisting of the dominant trees, arroyo willow (*Salix lasiolepis*), California buckeye (*Aesculus californica*), coast live oak (*Quercus agrifolia*), and California bay (*Umbellularia californica*), and black walnut (*Juglans nigra*), and several non-native trees including Lombardy poplar (*Populus nigra*), and cherry trees (*Prunus* ssp.). Understory vegetation is also sparse and consists of a few native species including Coyote brush (*Baccharis pilularis*), water parsley (*Oenanthe sarmentosa*), and poison oak (*Toxicodendron diversilobum*). Non-native species present in the understory include poison hemlock (*Conium maculatum*), sweet fennel (*Foeniculum vulgare*), English ivy (*Hedera helix*), wild radish (*Raphanus sativus*), curly dock (*Rumex crispus*), and Himalayan blackberry (*Rubus armeniacus*). Wildlife observed in the riparian corridor included chestnut-back chickadee (*Poecile rufescens*), California scrub-jay (*Apehlocoma californica*), and mule deer (*Odocoileus hemionus*).

4.1.3 Non-Native Grassland

Annual grasslands vegetation communities primarily consist of annual herbaceous plant species dominated by grasses initially intended for edible grains and livestock grazing that have

supplanted native perennial species and are generally associated with historical disturbance. This vegetation community is abundant within the BSA, generally located between areas of development as well as within the interface between development and the surrounding native vegetation communities (Kie 2005). In the BSA the open area between the residence and the riparian corridor is primarily grassland with a few fruit-baring and citrus trees including lemon (*Citrus limon*), fig (*Ficus ssp.*), olive (*Olea europaea*), and pear (*Pyrus* ssp.). Wildlife observed in the annual grassland in the BSA included turkey vulture (*Cathartes aura*), American crow (*Corvus brachyrhynchos*), and fox squirrel (*Sciurus niger*).

4.2 Floristic Surveys

4.2.1 Desktop Review

Database queries and review of other background resources determined that there are 60 special-status plant species documented within the Richmond 7.5-minute quadrangle where the BSA occurs and the six surrounding quadrangles which included Benicia, Mare Island, San Quentin, Oakland West, Oakland East and Briones Valley (quadrangles situated on the west side of the San Francisco Bay were not included in the database search). Table 1 below provides a complete evaluation for the potential to occur each for special-status plants listed in the database searches.

4.2.2 Plant Survey Results

Reconnaissance level plant surveys were conducted in the BSA; no protocol level botanical surveys were performed due to highly disturbed nature of the site. No special-status plant species, nor rare plant species, were identified within the BSA. The full list of observed plant species is provided in Appendix C.

TABLE 1. SPECIAL STATUS PLANT SPECIES FROM DATABASE LISTS AND POTENTIAL TO OCCUR WITHIN THE BSA

Scientific Name Common Name	Status*	Blooming Period	Habitat	Potential to Occur within the BSA
Napa false indigo *Amorpha californica* var. *napensis*	1B.2	Apr-Jul	Broadleafed upland forests in openings, chaparral, and cismontane woodland. Elev. 165-6,560 ft.	**None.** There are no forests, chaparral or woodland habitats in the BSA or the vicinity.
Bent-flowered fiddleneck *Amsinckia lunaris*	1B.2	Mar-Jun	Coastal bluff scrub, cismontaine woodland, valley and foothill grasslands. Elev. 10-1,640 ft.	**None.** There is no scrub or woodland habitat present in the BSA. The grassland present is highly disturbed and consists almost entirely of non-native, invasive species.
Pallid manzanita *Arctostaphylos pallida*	1B.1, FT, SE	Dec-Mar	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub. Elev. 605-1,525 ft.	**None.** There are no forests, chaparral, scrub or woodland habitats in the BSA or the vicinity.
Alkali milk-vetch *Astragalus tener* var. *tener*	1B.2	Mar-Jun	Playas, adobe clay in valley and foothill grassland, and vernal pools. Microhabitat: alkaline. Elev. 5-195 ft.	**None.** There are no alkaline conditions present in the BSA or the vicinity.
Big tarplant *Blepharizonia plumosa*	1B.1	Jul-Oct	Valley and foothill grassland, usually in clay soil. Elev. 100-1,655 ft.	**None.** This species was not observed during the August 14, 2025 site visit.
Mt. Diablo fairy-lantern *Calochortus pulchellus*	1B.2	Apr-Jun	Chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland. Elev. 100-2,755 ft.	**None.** The riparian woodland and valley and foothill grassland habitat is the BSA is highly disturbed and dominated by invasive non-native species.
Tiburon mariposa-lily *Calochortus tiburonensis*	1B.1, FT, ST	Mar-Jun	Valley and foothill grassland in serpentinite soil. Elev. 165-490 ft.	**None.** There is no serpentine soil present in the BSA.
Coastal bluff morning-glory *Calystegia purpurata* ssp. *saxicola*	1B.2	Mar-Sep	Coastal bluff scrub, coastal dunes, coastal scrub, North Coast coniferous forest. Elev. 0-345 ft.	**None.** There is no scrub, dune, or forest habitat present in the BSA.

Scientific Name Common Name	Status*	Blooming Period	Habitat	Potential to Occur within the BSA
Bristly sedge *Carex comosa*	2B.1	May-Sep	Coastal prairie, margins of marshes and swamps, and valley and foothill grasslands. Elev. 0-2,050 ft.	**None.** There is no prairie, marsh or swamp habitat present in the BSA. The grassland present in the BSA is highly disturbed and dominated by invasive, non-native species.
Tiburon paintbrush *Castilleja affinis* var. *neglecta*	1B.2, FE, ST	Apr-Jun	Valley and foothill grassland in serpentine soil. Elev. 195-1,310 ft.	**None.** There is no serpentine soil present in the BSA.
Pappose tarplant *Centromadia parryi* ssp. *parryi*	1B.2	May-Nov	Chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, vernally mesic valley and foothill grasslands. Elev. 0-1,380 ft.	**None.** There is no chaparral, prairie, meadow, marsh/swamp, or vernally mesic grassland habitat present in the BSA.
Point Reyes salty bird's-beak *Chloropyron maritimum* ssp. *palustre*	1B.2	Jun-Oct	Coastal salt marshes and swamps. Elev. 0-35 ft.	**None.** There is no marsh or swamp habitat present in the BSA.
Salty bird's-beak *Chloropyron molle* ssp. *molle*	1B.2, FE, SR	Jun-Nov	Coastal salt marshes and swamps. Elev. 0-10 ft.	**None.** There are no salt marshes or swamps present in the BSA.
San Francisco Bay spineflower *Chorizanthe cuspidata* var. *cuspidata*	1B.2	Apr-Aug	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub. Elev. 10-705 ft.	**None.** There is no scrub, dune, or prairie habitat present in the BSA.
Robust spineflower *Chorizanthe robusta* var. *robusta*	1B.1, FE	Apr-Sep	Maritime chaparral, openings in cismontane woodland, coastal dunes, coastal scrub. Elev. 10-985 ft.	**None.** There is no woodland, chaparral, dune or scrub habitat present in the BSA.
Bolander's water-hemlock *Cicuta maculata* var. *bolanderi*	2B.1	Jul-Sep	Brackish and freshwater marshes and swamps. Elev. 0-655 ft.	**None.** There is no marsh or swamp habitat present in the BSA.

Scientific Name Common Name	Status*	Blooming Period	Habitat	Potential to Occur within the BSA
Franciscan thistle *Cirsium andrewsii*	1B.2	Mar-Jul	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub. Elev. 0-490 ft.	**None.** There is no forest, scrub, or prairie habitat present in the BSA.
Presidio clarkia *Clarkia franciscana*	1B.1, FE,SE	May-Jul	Coastal scrub, valley and foothill grassland in serpentine soil. Elev. 80-1,100 ft.	**None.** There is no scrub habitat present in the BSA. The grassland present is highly disturbed and is dominated by invasive, non-native species.
Western leatherwood *Dirca occidentalis*	1B.2	Jan-Apr	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland. Elev. 80-1,395 ft.	**None.** The riparian corridor in the BSA is highly disturbed and is dominated by invasive, non-native species.
Tiburon buckwheat *Eriogonum luteolum* var. *caninum*	1B.2	May-Sep	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Elev. 0-2,295 ft.	**None.** The grassland in the BSA is highly disturbed and is dominated by invasive, non-native species.
Jepson's coyote-thistle *Eryngium jepsonii*	1B.2	Apr-Aug	Valley and foothill grassland, vernal pools. Elev.10-985 ft.	**None.** The grassland in the BSA is highly disturbed and is dominated by invasive, non-native species.
San Joaquin spearscale *Etriplex joaquinana*	1B.2	Apr-Oct	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland. Elev. 5-2,740 ft.	**None.** The grassland in the BSA is highly disturbed and is dominated by invasive, non-native species.
Minute pocket moss *Fissidens pauperculus*	1B.2	Moss	North Coast coniferous forest in damp soil. Elev. 35-3,360 ft.	**None.** There is no coniferous forest habitat present in the BSA.
Hillsborough chocolate lily *Fritillaria biflora* var. *ineziana*	1B.1	Mar-Apr	Cismontane woodland, valley and foothill grassland. Elev. 490 ft.	**None.** The grassland in the BSA is highly disturbed and is dominated by invasive, non-native species.

Scientific Name Common Name	Status*	Blooming Period	Habitat	Potential to Occur within the BSA
Blue coast gilia *Gilia capitata* ssp. *chamissonis*	1B.1	Apr-Jul	Coastal dunes, coastal scrub. Elev. 5-655 ft.	**None.** There is no dune or scrub habitat present in the BSA.
Dark-eyed gilia *Gilia millefoliata*	1.B2	Apr-Jul	Coastal dunes. Elev. 5-100 ft.	**None.** There is are no coastal dunes present in the BSA.
Diablo helianthella *Helianthella castanea*	1B.2	Mar-Jun	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Elev. 195-4,265 ft.	**None.** There is no forest, woodland or scrub habitat present in the BSA. The riparian and grassland habitat is dominated by invasive non-native species.
Congested-headed hayfield tarplant *Hemizonia congesta* ssp. *congesta*	1B.2	Apr-Nov	Valley and foothill grassland. Elev. 65-1,835 ft.	**None.** The grassland in the BSA is highly disturbed and is dominated by invasive, non-native species.
Marin western flax *Hesperolinon congestum*	1B.1 FT, ST	Apr-Jul	Chaparral, valley and foothill grassland. Elev. 15-1,215 ft.	**None.** There is no woodland or grassland habitat present in the BSA.
Water star-grass *Heteranthera dubia*	2B.2	Jul-Oct	Marshes and swamps (alkaline, still, slow-moving water). Elev. 100-4,905 ft.	**None.** There are no marshes or swamps present in the BSA.
Loma Prieta hoita *Hoita stobilina*	1B.1	May-Oct	Chaparral, cismontane woodland, riparian woodland. Elev. 100-2,820 ft.	**None.** There is no chaparral or woodland habitat present in the BSA. The riparian corridor in the BSA is dominated by invasive, non-native species.
Santa Cruz tarplant *Holocarpha macradenia*	1B.1, FT, SE	Jun-Oct	Coastal prairie, coastal scrub, valley and foothill grassland. Elev. 35-720 ft.	**None.** There is no prairie or scrub habitat present in the BSA. The grassland in the BSA is dominated by invasive, non-native species.

Scientific Name Common Name	Status*	Blooming Period	Habitat	Potential to Occur within the BSA
Kellog's horkelia *Horkelia cuneata var, sericea*	1B.1	Apr-Sep	Closed-cone coniferous forest, maritime chaparral, coastal dunes, coastal scrub. Elev. 35-655 ft.	**None.** There is no forest, chaparral, dune or scrub habitat present in the BSA.
Carquinez goldenbush *Isocoma arguta*	1B.1	Aug-Dec	Alkaline valley and foothill grassland. Elev. 5-65 ft.	**None.** The grassland in the BSA is highly disturbed and is dominated by invasive, non-native species.
Contra Costa goldfields *Lastenia conjugens*	1B.1, FE	Mar-Jun	Cismontane woodland, alkaline playas, valley and foothill grassland, vernal pools. Elev. 0-1,540 ft.	**None.** There is no woodland or playa habitat present in the BSA. The grassland in the BSA is dominated by invasive, non-native species.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	1B.2	May-Sep	Brackish and freshwater marshes and swamps. Elev. 0-15 ft.	**None.** There are no marshes or swamps present in the BSA.
Beach layia *Layia carnosa*	1B.1, FT, SE	Mar-Jul	Coastal dunes, coastal scrub with sandy soil. Elev. 0-195 ft.	**None.** There is no dune or scrub habitat present in the BSA.
Rose leptoshiphon *Leptosiphon rosaceus*	1B.1	Apr-Jul	Coastal bluff scrub. Elev. 0-330 ft.	**None.** There is no scrub habitat present in the BSA.
Mason's lilaeopsis *Lilaeopsis masonii*	1B.1	Apr-Nov	Brackish and freshwater marshes and swamps, riparian scrub. Elev. 0-35 ft.	**None.** There are no marshes or swamps present in the BSA. The riparian corridor in the BSA is dominated by invasive, non-native species.
Oregon meconella *Meconella oregana*	1B.1	Mar-Apr	Coastal prairie and coastal scrub. Elev. 820-2,035 ft.	**None.** There is no prairie or scrub habitat present in the BSA.
Woodland woollythreads *Monolopia gracilens*	1B.2	Feb-Jul	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, North Coast coniferous forest (openings), valley and foothill grasslands. Elev.339-3,935 ft.	**None.** There is no forest or woodland habitat present in the BSA. The grassland in the BSA is dominated by invasive, non-native species.

Scientific Name Common Name	Status*	Blooming Period	Habitat	Potential to Occur within the BSA
White-rayed pentachaeta *Pentachaeta bellidiflora*	1B.1, FE, SE	Mar-May	Cistmontane woodland, valley and foothill grassland (often serpentinite). Elev. 115-2,035 ft.	**None.** There is woodland habitat present in the BSA. The grassland in the BSA is dominated by invasive, non-native species.
Choris' popcornflower *Plagiobothrys chorisianus* var. *chorisianus*	1B.2	Mar-Jun	Chaparral, coastal prairie, coastal scrub. Elev. 10-525 ft.	**None.** There is no chaparral, prairie, or scrub habitat present in the BSA.
San Francisco popcornflower *Plagiobothrys diffusus*	1B.1, SE	Mar-Jun	Coastal prairie, valley and foothill grassland. Elev. 195-1,180 ft.	**None.** There is prairie habitat present in the BSA. The grassland in the BSA is dominated by invasive, non-native species.
Hairless popcornflower *Plagiobothrys glaber*	1A	Mar-May	Alkaline meadows and seeps, coastal salt marshes and swamps. Elev. 50-590 ft.	**None.** There are no meadows, seeps, marshes, or swamps present in or near the BSA.
North Coast semaphore grass *Pleuropogon hooverianus*	1B.1, ST	Apr-Jun	Broadleafed upland forest, meadows and seeps, North Coast coniferous forest. Elev. 35-2,200 ft.	**None.** There is no forest habitat, nor any meadows and seeps present in the BSA.
Adobe sanicle *Sanicula martima*	1B.1, SR	Feb-May	Chaparral, coastal prairie, meadows and seeps, valley and foothill grassland. Elev. 100-785 ft.	**None.** There is no chaparral or prairie habitat present in the BSA, nor are there meadows or seeps. The grassland in the BSA is dominated by invasive, non-native species.
Chaparral ragwort *Senecio aphanactis*	1B.2	Jan-May	Chaparral, cismontane woodland, coastal scrub. Elev. 50-2,625 ft.	**None.** There is no chaparral or scrub habitat present in the BSA.
Long-styled sand-spurrey *Spergularia macrotheca* var. *longistyla*	1B.2	Feb-May	Meadows and seeps, marshes and swamps. Elev. 0-835 ft.	**None.** There are no meadows, seeps, marshes, or swamps present in or near the BSA.

Scientific Name Common Name	Status*	Blooming Period	Habitat	Potential to Occur within the BSA
Most beautiful jewelflower *Streptanthus albidus* ssp. *peramoenus*	1B.2	Mar-Oct	Chaparral, cismontane woodland, valley and foothill grassland. Found in serpentine soil. Elev. 310-3,280 ft.	**None.** There is no serpentine soil present in the BSA.
Tiburon jewelflower *Streptanthus glandulosus* ssp. *niger*	1B.1, FE, SE	May-Jun	Valley and foothill grassland in serpentine soil. Elev. 100-490 ft.	**None.** There is no serpentine soil present in the BSA.
Northern slender pondweed *Stuckenia filiformis* ssp. *alpina*	2B.2	May-Jul	Shallow freshwater marshes and swamps. Elev. 985-7,055 ft.	**None.** There are no marshes or swamps present in or near the BSA.
California seablite *Suaeda californica*	1B.1, FE	Jul-Oct	Coastal salt marshes and swamps. Elev. 0-50 ft.	**None.** There are no marshes or swamps present in or near the BSA.
Suisun Marsh aster *Symphyotrichum lentum*	1B.2	Apr-Nov	Brackish freshwater marshes and swamps. Elev. 0-10 ft.	**None.** There are no marshes or swamps present in or near the BSA.
Two-fork clover *Trifolium amoenum*	1B.1, FE	Apr-Jun	Coastal bluff scrub, valley and foothill grassland (sometimes serpentinite). Elev. 15-1,360 ft.	There is no scrub habitat present in the BSA. The grassland in the BSA is dominated by invasive, non-native species.
Saline clover *Trifolium hydrophilum*	1B.2	Apr-Jun	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elev. 0-985 ft.	**None.** There is no marsh or vernal pool habitat present in the BSA. The grassland in the BSA is dominated by invasive, non-native species.
Coast triquetrella *Triquetrella californica*	1B.2	moss	Coastal bluff scrub, coastal scrub. Elev. 35-330 ft.	**None.** There is no scrub habitat present in the BSA.
Oval-leaved viburnum *Viburnum ellipticum*	2B.3	May-Jun	Chaparral, cismontane woodland, lower montane coniferous forest. Elev. 705-4,595 ft.	**None.** There is no chaparral, woodland or forest habitat present in the BSA.

* Status:

FE: Federal Endangered
FT: Federal Threatened

California Rare Plant Rank (CRPR):
1A: Plants presumed extirpated in California and either rare or extinct elsewhere

SE: California State Endangered	1B: Plants rare, threatened, or endangered in California or elsewhere
ST: California State Threatened	2B: Plants rare, threatened, or endangered in California but more common elsewhere
SR: California State Rare	3: Plants about which more information is needed
	4: Plants of limited distribution
	0.1: Seriously threatened in California
	0.2: Moderately threatened in California
	0.3: Not very threatened in California

4.3 Special-Status Wildlife Species

For the purposes of this report, special-status wildlife species include those listed as endangered, threatened, proposed, or candidate for listing by the USFWS or the CDFW. Other wildlife species regarded as having special status by the State of California include species of special concern, as listed by the CDFW on the California Natural Diversity Database. Additional avian species receive special protection under the federal Bald and Golden Eagle Protection Act and the federal Migratory Bird Treaty Act. The California Fish & Game Code provides protection for "fully protected birds", "fully protected mammals", "fully protected reptiles and amphibians", and "fully protected fish."

4.3.1 Desktop Review

Database searches and review of other background resources found 67 special-status wildlife species documented within the Richmond 7.5-minute quadrangle where the BSA occurs and the six surrounding quadrangles. Of these species, three were determined to have a low potential to occur based upon the presence of suitable habitat. Table 2 below provides a complete evaluation of potential for the special-status wildlife listed on the database lists to occur. The three criteria most important in determining species presence include known range, presence of suitable habitat, and nearby known occurrences. The potential for each special-status species to occur in the project area was then determined according to the following criteria:

- None: suitable habitat is entirely absent and there is no documented records for the species being evaluated within a 10-mile radius.
- Unlikely: suitable habitat is present and project site is within the range of the species being evaluated, however there are no documented records within a 5-mile radius. Species was not observed during wildlife surveys.
- Low Potential: suitable or marginally suitable habitat for the species being evaluated is present, but few documented records occur within a 5-mile radius. Species was not observed during wildlife surveys.
- Moderate potential: suitable habitat for the species being evaluated is present and there are nearby documented records. Species was not observed during wildlife surveys.
- High potential: suitable habitat for the species being evaluated is present and there are recent documented records of the species occurring within or adjacent to the BSA. Species was not observed during wildlife surveys.
- Present: suitable habitat for the species being evaluated is present and the species has been documented on BSA. Species may or may not have been observed during wildlife surveys.

TABLE 2. SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR WITHIN THE BSA

Scientific Name Common Name	Status*	Habitat	Potential to Occur within the BSA
Invertebrates			
Bombus occidentalis Western bumble bee	SCE	Valley and foothill grasslands of Coastal California east to the Sierra Cascade crest and south into Mexico. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendomecon, Eschscholzia, and Eriogonum*.	**Unlikely.** The only CNDDB records within the database search was for bees collected for museum specimens from 1910 to 1992 at several locations in the region. Vegetation removal, if required would be minimal and would not be likely to prevent bumble bees from foraging. None of the food plants were observed during the August 14, 2025 site visit.
Bombus crotchii Crotch's bumble bee	SCE	Coastal California east to the Sierra Cascade crest and south into Mexico. Food plant general include *Antirrhinum, Phacelia, Clarkia, Dendomecon, Eschscholzia, and Eriogonum*.	**Unlikely.** The only CNDDB records within the database search area was for one bee that was collected as a museum specimen in 1933 (Occurrence #308). The same record states that 1 was observed and photographed on November 6, 2015 however it is not apparent if it means a live bumble bee or the collected specimen was photographed. No other information is given. Vegetation removal, if required would be minimal and would not be likely to prevent bumble bees from foraging. None of the food plants were observed during the August 14, 2025 site visit.
Speyeria callippe callippe Callippe silverspot butterfly	FE	Restricted to the northern coastal scrub of the San Francisco Peninsula.	**None.** There is no coastal scrub habitat present in the BSA.

Scientific Name Common Name	Status*	Habitat	Potential to Occur within the BSA
Euphydryas Editha bayensis Bay checkerspot butterfly	FT	Restricted to native grasslands on outcrops of serpentine would in the vicinity of San Francisco Bay. *Plantago erecta* is the primary host plant; *Orthocarpus densiflorus* and *O. purpurescens* are the secondary host plants.	**None.** The small strip of grassland in the BSA is dominated by invasive, non-native species. There are no serpentine soils present.
Danaus Plexippus pop. 1 California overwintering population Monarch butterfly	FPT	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (*eucalyptus*, Monterey pine, cypress), with nectar and water sources nearby.	**None.** There are several CNDDB records for known monarch winter roost sites along the bay front. There are a few scattered eucalyptuses in the riparian corridor but no groves. The riparian vegetation is sparse in the BSA and is not suitable overwintering habitat.
Fish			
Acipenser medirostris pop. 1 Green sturgeon – southern DPS	FT, SSC	Spawns in the Sacramento, Feather and Yuba Rivers. Spawning occurs primarily in cold sections of mainstem rivers in deep pools with substrates containing small to medium sized sand.	**None.** Appian Creek in the BSA does not provide suitable foraging or breeding habitat.
Hypomesus transpacificus Delta smelt	FT, SE	Occur in the aquatic estuaries of the Sacramento-San Joaquin Delta. Seasonally found in Suisun Bay, Carquinez Strait and San Pablo Bay.	**None.** There are no estuaries in or near the BSA.
Thaleichthys pacificus Eulachon	FT, SSC	Found in Klamath River, Mad River, Redwood Creek, and in small numbers in Smith River and Humboldt Bay tributaries. Spawn in lower reaches of coastal rivers.	**None.** Appian Creek in the BSA is not within the range of this species.
Spirinchus thaleichthys pop. 2 Longfin smelt – San Francisco Bay DPS	FE, ST	Pelagic and anadromous within the Sacramento-San Joaquin River Delta, San Francisco Bay, and Gulf of the Farallones, Spawns in lower freshwater reaches of Sacramento and San Joaquin Rivers.	**None.** There is two partial and one significant fish barrier in San Pablo Creek that would prevent fish from swimming upstream into San Pablo Creek and its tributaries (CDFW 2025c).

Scientific Name Common Name	Status*	Habitat	Potential to Occur within the BSA
Pogonichthys macrolepidotus Sacramento splittail	SSC	Endemic to the lakes and rivers of the Central Valley, but now confined to the Delta, Suisun Bay and associated marshes.	**None.** Appian Creek in the BSA is not within the range of this species.
Archoplites interruptus Sacramento perch	SSC	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley.	**None.** Appian Creek in the BSA is not within the range of this species.
Eucyclogobius newberryi Tidewater goby	FE, SSC	Found in brackish water habitats along the California coast from Agua Hedionda Lagoon in San Diego County to the mouth of the Smith River in Humbolt County.	**None.** Appian Creek in the BSA does not have brackish water.
Amphibians			
Ambystoma californiense pop. 1 California tiger salamander – central California DPS	FT, ST, WL	Lives in vacant or mammal-occupied burrows throughout most of the year, in grassland, savanna, or open woodland habitats.	**None.** There is no suitable habitat present in the BSA.
Rana draytonii California red-legged frog	FT, SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	**None.** Appian Creek does not provide suitable breeding habitat for this species. The nearest CNDDB record (#1113) is for a frog found in 2008 below San Pablo Dam at a location approximately 2.9 miles southeast of the BSA. There are no other occurrences in the BSA vicinity therefore it is unlikely that the frog would traverse the creek in the BSA.

Scientific Name Common Name	Status*	Habitat	Potential to Occur within the BSA
Rana boylii pop. 4 Foothill yellow-legged frog – central Coast DPS	FT, SSC	San Francisco Peninsula and Diablo Range south of San Francisco Bay Estuary and south through the Santa Cruz and Gabilan Mountains east of the Salinas River in the southern inner Coast Ranges. Partly shaded shallow streams and riffles, with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying and at least 15 weeks to attain metamorphosis.	**None.** Appian Creek does not provide suitable breeding habitat for this species.
Reptiles			
Actinemys marmorata Northwestern pond turtle	FPT SSC	Streams, ponds, lakes, and permanent and ephemeral wetlands. Nest in terrestrial habitat usually in dry soil with sparse vegetation.	**None.** Appian Creek in the BSA does not provide suitable breeding habitat. The is only one CNDDB record (#1480) for this species within a five-mile radius which is for turtles found in Pinole Creek at a location that is 4 miles east of the BSA. There is no connectivity between Appian Creek in the BSA and Pinole Creek.
Masticophis lateralis euryxanthus Alameda whipsnake	FT, ST	Typically found in chaparral and scrub habitats but also found in adjacent grassland, oak savanna and woodland habitats.	**None.** The BSA is in a highly developed area and does not provide suitable habitat for this species.
Birds			
Nannopterum auritum Double-crested cormorant	WL	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state.	**None.** No suitable nesting habitat is present in the BSA.

Scientific Name Common Name	Status*	Habitat	Potential to Occur within the BSA
Branta hutchinsii leucopareia Cackling goose (Aleutian Canada goose)	WL	Sacramento/San Joaquin standing waters, valley and foothill grasslands.	**None.** The BSA is devoid of suitable open and ponded habitat.
Circus hudsonius Northern harrier	SSC	Coastal salt and freshwater marsh. Nests and forages in grasslands. Nests on ground in shrubby vegetation, usually at marsh edge.	**None.** There are no marshes in or near the BSA.
Elanus leucurus White-tailed kite	FP	Nests in open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Low.** This species could nest in the tall trees in the riparian corridor in the BSA.
Accipiter cooperii Cooper's hawk	WL	Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains, also live oaks.	**Low.** This species could nest in the tall trees in the riparian corridor in the BSA.
Aquila chrysaetos Golden eagle	FP	Nests in cliff-walled canyons and large trees in open areas.	**None.** There is no suitable nesting habitat in or near the BSA.
Haliaeetus leucocephalus Bald eagle	FD, SE, FP	Nests in large, old-growth or dominant live trees with open branches in lower montane coniferous forests.	**None.** There is no suitable nesting habitat in or near the BSA.
Pandion haliaetus Osprey	WL	Nests along ocean shores, bays, freshwater lakes and larger streams.	**None.** There is no suitable nesting habitat in or near the BSA.
Falco peregrinus anatum American peregrine falcon	FD, SD	Nests near wetlands, rivers, or other water on cliffs, banks, dunes, mounds, and also on human made structures.	**None.** There is no suitable nesting habitat in or near the BSA.

Scientific Name Common Name	Status*	Habitat	Potential to Occur within the BSA
Rallus obsoletus obsoletus California Ridgway's rail	FE, SE, FP	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of the San Francisco Bay.	**None.** There are no marshes in or near the BSA.
Coturnicops noveboracensis Yellow rail	SSC	Freshwater marshes	**None.** There are no marshes in or near the BSA. The BSA is outside of the range of this species.
Laterallus jamaicensis coturniculus California black rail	ST, FP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays.	**None.** There are no marshes in or near the BSA.
Charadrius nivosus nivosus Western snowy plover	FT	Inhabit sandy beaches, salt pond levees, and shores of large alkali lakes.	**None.** There is no suitable nesting habitat in or near the BSA.
Sternula antillarum browni California least tern	FE, SE, FP	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeders on bare or sparsely vegetated, flat substrates; sandy beaches, alkali flats, landfills, or paved areas.	**None.** There is no suitable nesting habitat in or near the BSA.
Coccyzus americanus Western yellow-billed cuckoo	FT, SE	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems.	**None.** There is no suitable nesting habitat in or near the BSA.
Asio flammeus Short-eared owl	SSC	Found in swamp lands, both fresh and salt, lowland meadows, and irrigated alfalfa fields.	**None.** There is no suitable nesting habitat in or near the BSA.

Scientific Name Common Name	Status*	Habitat	Potential to Occur within the BSA
Athene cunicularia Burrowing owl	SCE	Nests in open dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	**None.** There is no suitable nesting habitat in or near the BSA.
Geothlypis trichas sinuosa Saltmarsh common yellowthroat	SSC	Resident of the San Francisco Bay region in fresh and saltwater marshes.	**None.** There are no marshes in or near the BSA.
Melospiza melodia maxillaris Suisun song sparrow	SSC	Resident of brackish-water marshes surrounding Suisun Bay.	**None.** There are no marshes in or near the BSA. The BSA is outside of the range of this species.
Melospiza melodia pusillula Alameda song sparrow	SSC	Resident of salt marshes bordering south arm of San Francisco Bay.	**None.** There are no marshes in or near the BSA. The BSA is outside of the range of this species.
Melospiza melodia samuelis *San Pablo song sparrow*	SSC	Resident of salt marshes along the north side of San Francisco and San Pablo Bays.	**None.** There are no marshes in or near the BSA.
Zanthocephalus xanthocephalus Yellow-headed blackbird	SSC	Nests in freshwater emergent wetlands with dense vegetation and deep water. Often along borders of lakes or ponds.	**None.** There are no wetlands or open waters in or near the BSA. The BSA is outside of the range of this species.
Agelaius tricolor Tricolored blackbird	FT, SSC	Highly colonial species, most numerous in the Central Valley and vicinity. Requires open water protected nesting substrate, and foraging area.	**None.** The BSA does not provide suitable nesting habitat for this species.

Scientific Name Common Name	Status*	Habitat	Potential to Occur within the BSA
Mammals			
Sorex vagrans halicoetes Salt-marsh wandering shrew	SSC	Salt marshes of the south arm of the San Francisco Bay.	**None.** There are no marshes in or near the BSA.
Sorex ornatus sinuosus Suisun shrew	SSC	Tidal marshes of the northern shores of San Pablo and Suisun Bays.	**None.** There are no marshes in or near the BSA.
Scapanus latimanus parvus Alameda Island mole	SSC	Only known from Alameda Island.	**None.** The BSA is outside of the range of this species.
Corynorhinus townsendii Townsend's big-eared bat	SSC	Broadleaved upland forest, chaparral, chenopod scrub, Great Basin Grassland; most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Sensitive to human disturbance.	**None.** The residence in the BSA does not provide suitable roosting habitat.
Antrozous pallidus Pallid bat	SSC	Day roost in caves, crevices, mines, and occasionally in hollow trees and buildings. Night roost in more open sites, such as porches and open buildings.	**Low.** If the building or any trees are proposed for removal, a qualified biologist should assess the site for roosting bats.
Nyctinomops macrotis Big free-tailed bat	SSC	Low lying areas in Southern California. Need high cliffs or rocky outcrops for roosting sites.	**None.** The BSA is out of the range of this species.
Taxidea taxus American badger	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soil.	**None.** The BSA is in a highly urbanized area.

Scientific Name Common Name	Status*	Habitat	Potential to Occur within the BSA
Reithrodonomys raviventris Salt marsh harvest mouse	FE, SE, FP	Occur only in the saline emergent wetlands of the San Francisco Bay and its tributaries. Pickleweed is primary habitat but may occur in other marsh vegetation types and adjacent upland areas.	**None.** There are no marshes or wetlands in or near the BSA.
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	SSC	Forest habitats of moderate canopy and moderate to dense understory. Constructs nests of shredded grass, leaves and other material. May be limited by availability of nest-building materials.	**None.** No woodrat nests were observed during the August 14, 2025 site survey. The understory in the riparian corridor is sparse and does not provide much protection.
Microtis californicus sanpabloensis San Pablo vole	SSC	Saltmarshes of San Pablo Creek, on the south shore of San Pablo Bay.	**None.** There are no salt marshes in or near the BSA.

* Status:

FE: Federal Endangered
FPT: Federal Proposed Threatened
SE: California State Endangered
ST: California State Threatened
FP: Fully Protected
FT: Federal Threatened
FD: Federal Delisted
WL: CDFW Watch List
SSC: CDFW Species of Special Concern

4.3.2 Wildlife Survey Results

Reconnaissance level wildlife surveys were conducted by BioMaAS biologist, Sandra Etchell on August 14, 2025. During these surveys, no special-status wildlife species was observed. The species with low potential to occur are discussed in greater detail in the following sections.

Cooper's Hawk

Coopers hawk (*Accipiter cooperii*) is a CDFW Watch List[2] species with no federal special status listing. Cooper's hawks are a medium sized raptor with long yellow legs, a brownish gray, mottled back, a white chest with brown striations, a long, barred tail, and a brown head. Adult hawks develop a black cap on their head once they mature.

Cooper's hawks occur in wooded areas that range from 0 to 9,000 feet Mean Sea Level throughout the U.S. They prefer dense stands of live oak, riparian deciduous, or other forest habitats where they forage and nest. They are seldom found in areas with sparse vegetation. They nest in the crotches of deciduous trees usually from 20-50 feet above the ground (Polite 1988). The riparian trees provide marginally suitable nesting habitat for Cooper's hawk therefore there is a low potential for this species to occur, however it should be included in the pre-construction nesting bird survey (see Section 5 Recommendations below).

4.3.2.1 White-tailed Kite

White-tailed kite (*Elanus leucurus*) is a state listed fully protected species with no federal special status listing. white-tailed kites are a medium to large white hawk that has an all-white head, chest, belly and tail, black on its shoulders or mantle, and gray on its back and wings. It resides in a variety of open habitats such as coastal and valley lowlands and uses trees with dense canopies for cover and nesting. Kites build large stick nests near the top of dense trees. The riparian trees provide marginally suitable nesting habitat for white-tailed kite therefore there is a low potential for this species to occur however it should be included in the pre-construction nesting bird survey.

4.3.2.2 Pallid Bat

The pallid bat (*Antrozous palidus*) is a state SSC with no federal listing. Pallid bats occur in a variety of habitats throughout California in lower elevations. They can be found in grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. This large pale bat establishes maternity roosts in crevices in rocky outcrops and cliffs, caves, mines, hollowed trees, large tree cavities, and vacant buildings (Harris 2021). There is marginal suitable roosting habitat in the BSA, therefore a pre-construction habitat assessment for roosting bats is recommended.

4.4 Wildlife Movement and Migration Corridors

The ACE database mapped the BSA region as a Rank 1 Having Limiting Connectivity Movement in regards to the movement of terrestrial wildlife. This ranking is defined as consisting of areas where land use may limit options for providing connectivity (e.g., agriculture, urban) or no connectivity

[2] CDFW Watch List species is defined as taxa that were previously SSCs but do not currently meet SSC criteria, and for which there is concern and a need for additional information to clarify status.

importance has been identified in models. Some mammals that likely move through the area include gray fox (*Urocyon cinereoargenteus*), raccoon, mule deer, and Virginia opossum.

4.5 Sensitive Natural Community Surveys

There are no sensitive natural communities present within the BSA. The riparian corridor, while not ranked as a sensitive natural community, is protected by federal, state, and local regulations described above in Section 2.

4.6 Critical Habitat

The BSA is not within USFWS or NOAA designated critical habitat (USFWS 2025c, NOAA 2025).

4.7 Aquatic Resources

No potential jurisdictional wetlands were found within the BSA. Appian Creek is a jurisdictional water of the U.S. and State because it falls within the regulatory criteria described above in Section 2.

5 Conclusions, Recommendations, CEQA Findings

The following conclusions and recommendations are included to summarize the findings of this report and to provide measures to protect biological resources in the BSA and the Project footprint.

1. A protective buffer of 30 to 50 feet from Appian Creek will be established by Contra Costa County. Silt fence or similar Best Management Practices (BMPs) should be established to prevent construction related debris and runoff from entering the creek during construction.
2. A preconstruction nesting bird survey should be conducted during bird breeding season (February 1 through August 31) by a qualified biologist who is familiar with the nesting behavior of a variety of species and can establish protective buffers around the nest based upon the type of construction activity. Nest buffers should be adhered to by all construction related personnel and can only be removed by the biologist after the nest is no longer active.
3. A bat habitat assessment is recommended to evaluate the potential use of the residence and any trees proposed for removal.
4. Vegetation removal, if necessary, should be kept to a minimum. If riparian vegetation removal is required, a CDFW Streambed Alteration Agreement, and RWQCB 401 Water Quality Certification if required prior to removal.

Based upon the results of the Biological Resources Analysis, findings as they pertain to CEQA are as follows:

Will the project:

a) 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 Wildlife or U.S. Fish and Wildlife Sevice?

Response: Less than Significant with Mitigation. Three species, Cooper's hawk, white-tailed kite, and pallid bat have a low potential to occur in the BSA, if the recommendations above are followed, the project will not have an adverse effect on protected/listed species.

b) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Response: No impact if riparian habitat is avoided. Contra Costa County requires a 30 to 50 foot setback from the riparian corridor. If the setback is adhered to and no vegetation removal or work in the creek occurs, there will be no adverse effect on the riparian habitat or other sensitive natural communities.

c) have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through the direct removal, filling, hydrological interruption, or other means?

Response: No impact. No state or federally protected wetlands were found on the site. Appian Creek is protected by both federal and state regulations however the Project proposes to avoid the creek.

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 wildlife nursery sites?

Response: Less than Significant with Mitigation. The Project will not interfere with the movement of fish, wildlife, or wildlife nursery sites. The building and trees in the BSA provide suitable roosting habitat for several species of bats therefore a bat habitat assessment is included in the recommendations.

d) conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Response: Less than Significant with Mitigation. Tree ordinance information is included in Section 4. It is the responsibility of the Project proponent to ensure compliance with the ordinance.

e) conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Response: No impact. The Project is not within an area covered by a Habitat Conservation Plan.

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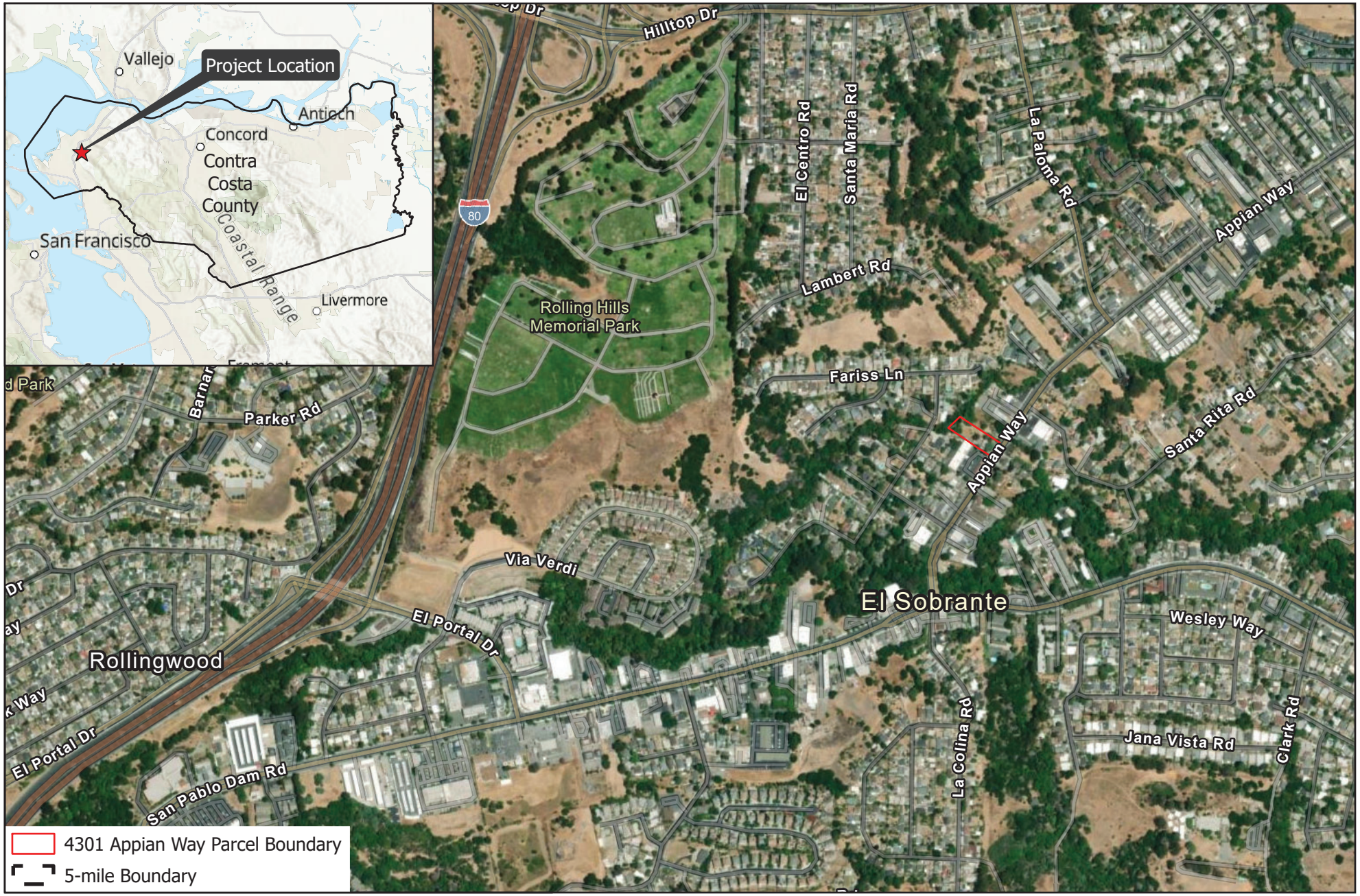
Appendices

Appendix A
Figures



SOURCE: Esri, CGIAR, USGS, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Maxar

BIOMAAS INC
Environmental Consultants

N

0 550 1,100 Feet

FIGURE 1

Project Location

4301 Appian Way, El Sobrante

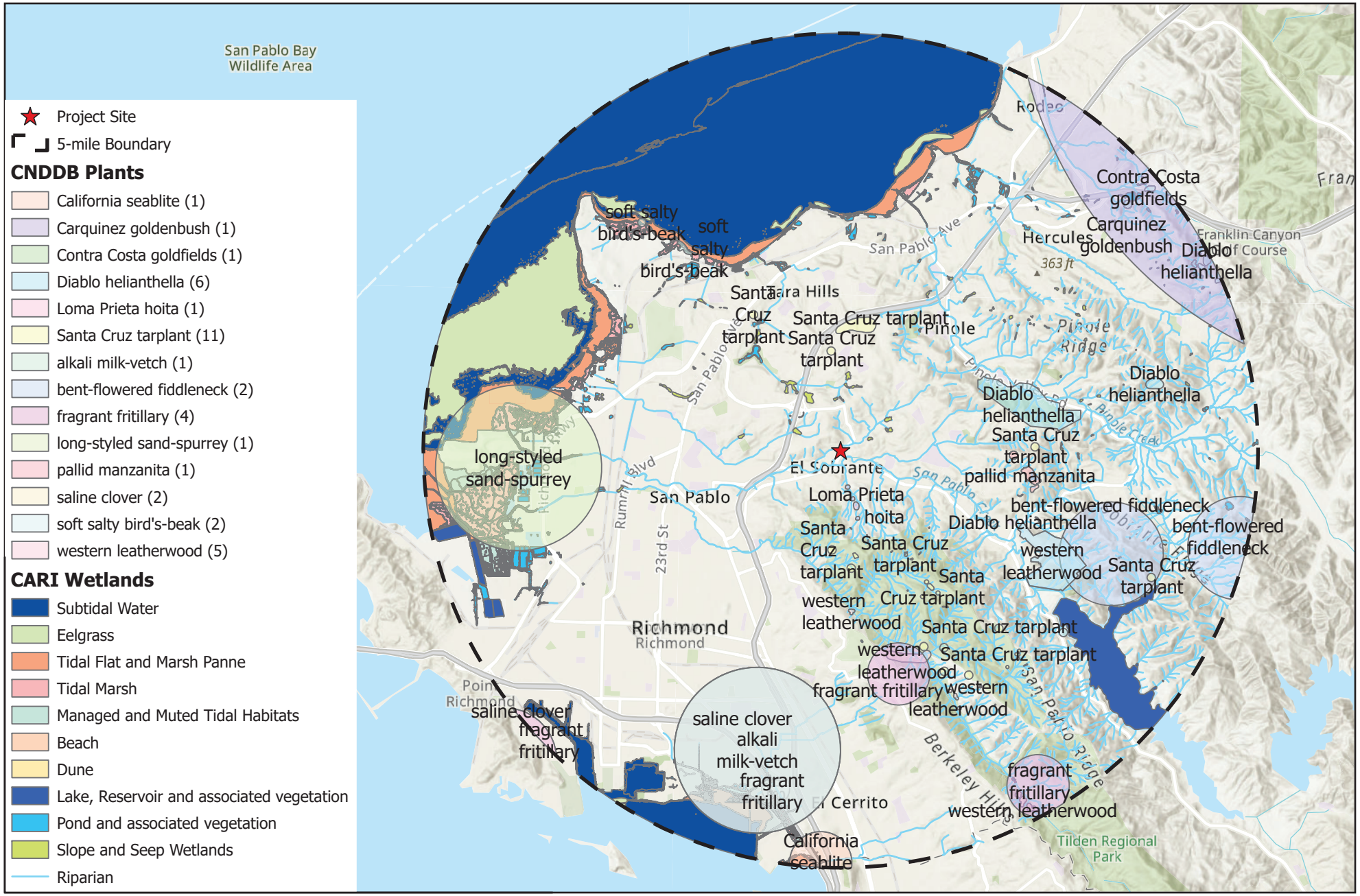
SOURCE: Maxar, Microsoft, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community

BIOMAAS INC
Environmental Consultants

FIGURE 2

Vegetative Communities

4301 Appian Way, El Sobrante



SOURCE: Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community

FIGURE 3

BIOMAAS INC
Environmental Consultants

CNDDB Plants and Sensitive Aquatic Resources

4301 Appian Way, El Sobrante

SOURCE: Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community

FIGURE 4

BIOMAAS INC
Environmental Consultants

N

0 5,500 11,000 Feet

CNDDB Wildlife and Critical Habitat

4301 Appian Way, El Sobrante

Appendix B
Database Query Results

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Richmond (3712283) OR Briones Valley (3712282) OR Oakland East (3712272) OR Oakland West (3712273) OR San Quentin (3712284) OR Mare Island (3812213) OR Benicia (3812212))
 AND Taxonomic Group IS (Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Amorpha californica var. napensis Napa false indigo	PDFAB08012	None	None	G4T2	S2	1B.2
Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
Arctostaphylos pallida pallid manzanita	PDERI04110	Threatened	Endangered	G1	S1	1B.1
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Blepharizonia plumosa big tarplant	PDAST1C011	None	None	G1G2	S1S2	1B.1
Calochortus pulchellus Mt. Diablo fairy-lantern	PMLIL0D160	None	None	G2	S2	1B.2
Calochortus tiburonensis Tiburon mariposa-lily	PMLIL0D1C0	Threatened	Threatened	G1	S1	1B.1
Calystegia purpurata ssp. saxicola coastal bluff morning-glory	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Carex comosa bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1
Castilleja affinis var. neglecta Tiburon paintbrush	PDSCR0D013	Endangered	Threatened	G4G5T1T2	S1S2	1B.2
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T2	S2	1B.1
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Chloropyron molle ssp. molle soft salty bird's-beak	PDSCR0J0D2	Endangered	Rare	G2T1	S1	1B.2
Chorizanthe cuspidata var. cuspidata San Francisco Bay spineflower	PDPGN04081	None	None	G2T1	S1	1B.2
Chorizanthe robusta var. robusta robust spineflower	PDPGN040Q2	Endangered	None	G2T1	S1	1B.1
Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAPI0M051	None	None	G5T4T5	S2?	2B.1
Cirsium andrewsii Franciscan thistle	PDAST2E050	None	None	G3	S3	1B.2
Clarkia concinna ssp. automixa Santa Clara red ribbons	PDONA050A1	None	None	G5?T3	S3	4.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Clarkia franciscana Presidio clarkia	PDONA050H0	Endangered	Endangered	G1	S1	1B.1
Dirca occidentalis western leatherwood	PDTHY03010	None	None	G2	S2	1B.2
Eriogonum luteolum var. caninum Tiburon buckwheat	PDPGN083S1	None	None	G5T2	S2	1B.2
Eryngium jepsonii Jepson's coyote-thistle	PDAPI0Z130	None	None	G2	S2	1B.2
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Gilia capitata ssp. chamissonis blue coast gilia	PDPLM040B3	None	None	G5T2	S2	1B.1
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Helianthella castanea Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
Hemizonia congesta ssp. congesta congested-headed hayfield tarplant	PDAST4R0W1	None	None	G5T2	S2	1B.2
Hesperolinon congestum Marin western flax	PDLIN01060	Threatened	Threatened	G1	S1	1B.1
Heteranthera dubia water star-grass	PMPON03010	None	None	G5	S2	2B.2
Hoita strobilina Loma Prieta hoita	PDFAB5Z030	None	None	G2?	S2?	1B.1
Holocarpha macradenia Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
Horkelia cuneata var. sericea Kellogg's horkelia	PDROS0W043	None	None	G4T1?	S1?	1B.1
Isocoma arguta Carquinez goldenbush	PDAST57050	None	None	G1	S1	1B.1
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Lathyrus jepsonii var. jepsonii Delta tule pea	PDFAB250D2	None	None	G5T2	S2	1B.2
Layia carnosa beach layia	PDAST5N010	Threatened	Endangered	G2	S2	1B.1
Leptosiphon rosaceus rose leptosiphon	PDPLM09180	None	None	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Meconella oregana Oregon meconella	PDPAP0G030	None	None	G2	S2	1B.1
Monolopia gracilens woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
Pentachaeta bellidiflora white-rayed pentachaeta	PDAST6X030	Endangered	Endangered	G1	S1	1B.1
Plagiobothrys chorisianus var. chorisianus Choris' popcornflower	PDBOR0V061	None	None	G3T1Q	S1	1B.2
Plagiobothrys diffusus San Francisco popcornflower	PDBOR0V080	None	Endangered	G1Q	S1	1B.1
Plagiobothrys glaber hairless popcornflower	PDBOR0V0B0	None	None	GX	SX	1A
Pleuropogon hooverianus North Coast semaphore grass	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Polygonum marinense Marin knotweed	PDPGN0L1C0	None	None	G2Q	S2	3.1
Sanicula maritima adobe sanicle	PDAPI1Z0D0	None	Rare	G2	S2	1B.1
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	1B.2
Spergularia macrotheca var. longistyla long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
Streptanthus albidus ssp. peramoenus most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
Streptanthus glandulosus ssp. niger Tiburon jewelflower	PDBRA2G0T0	Endangered	Endangered	G4T1	S1	1B.1
Stuckenia filiformis ssp. alpina northern slender pondweed	PMPOT03091	None	None	G5T5	S2S3	2B.2
Suaeda californica California seablite	PDCHE0P020	Endangered	None	G1	S1	1B.1
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Trifolium amoenum two-fork clover	PDFAB40040	Endangered	None	G1	S1	1B.1
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Triquetrella californica coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3	2B.3

Record Count: 60

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Richmond (3712283) OR Briones Valley (3712282) OR Oakland East (3712272) OR Oakland West (3712273) OR San Quentin (3712284) OR Mare Island (3812213) OR Benicia (3812212))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Acipenser medirostris pop. 1 green sturgeon - southern DPS	AFCAA01031	Threatened	None	G2T1	S1	SSC
Actinemys marmorata northwestern pond turtle	ARAAD02031	Proposed Threatened	None	G2	SNR	SSC
Adela oplerella Opler's longhorn moth	IILEE0G040	None	None	G2	S2	
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G1	S1	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Asio flammeus short-eared owl	ABNSB13040	None	None	G5	S2	SSC
Athene cunicularia burrowing owl	ABNSB10010	None	Candidate Endangered	G4	S2	SSC
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G2G3	S1S2	
Bombus crotchii Crotch's bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
Bombus occidentalis western bumble bee	IIHYM24252	None	Candidate Endangered	G3	S1	
Bombus pensylvanicus American bumble bee	IIHYM24260	None	None	G3G4	S2	
Branta hutchinsii leucopareia cackling (=Aleutian Canada) goose	ABNJB05035	Delisted	None	G5T3	S3	WL

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S2	
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S2	SSC
Danaus plexippus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Proposed Threatened	None	G4T1T2Q	S2	
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	AMAFD03061	None	None	G4T1	S2	
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Euphydryas editha bayensis Bay checkerspot butterfly	IILEPK4055	Threatened	None	G4G5T1	S3	
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	
Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Helminthoglypta nickliniana bridgesi Bridges' coast range shoulderband	IMGASC2362	None	None	G3T1	S1S2	
Hydroprogne caspia Caspian tern	ABNNM08020	None	None	G5	S4	
Hypomesus transpacificus Delta smelt	AFCHB01040	Threatened	Endangered	G1	S1	
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G4	S3S4	
Lasiurus cinereus hoary bat	AMACC05032	None	None	G3G4	S4	
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3T1	S2	FP
Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
Melospiza melodia maxillaris Suisun song sparrow	ABPBXA301K	None	None	G5T3	S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Melospiza melodia pusillula Alameda song sparrow	ABPBXA301S	None	None	G5T2T3	S2	SSC
Melospiza melodia samuelis San Pablo song sparrow	ABPBXA301W	None	None	G5T2	S2	SSC
Microcina leei Lee's micro-blind harvestman	ILARA47040	None	None	G1	S1	
Microcina tiburona Tiburon micro-blind harvestman	ILARA47060	None	None	G2	S2	
Microtus californicus sanpabloensis San Pablo vole	AMAFF11034	None	None	G5T1T2	S1S2	SSC
Nannopterum auritum double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	AMAFF08082	None	None	G5T2T3	S2S3	SSC
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Nyctinomops macrotis big free-tailed bat	AMACD04020	None	None	G5	S3	SSC
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	G3	S3	SSC
Pomatiopsis californica Pacific walker	IMGASJ9020	None	None	G1	S1	
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05011	Endangered	Endangered	G3T1	S2	FP
Rana boylii pop. 4 foothill yellow-legged frog - central coast DPS	AAABH01054	Threatened	Endangered	G3T2	S2	
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S3	FP
Scapanus latimanus parvus Alameda Island mole	AMABB02031	None	None	G5T1Q	SH	SSC
Sorex ornatus sinuosus Suisun shrew	AMABA01103	None	None	G5T1T2Q	S1S2	SSC
Sorex vagrans halicoetes salt-marsh wandering shrew	AMABA01071	None	None	G5T1	S1	SSC
Speyeria callippe callippe callippe silverspot butterfly	IILEPJ6091	Endangered	None	G5T1	S1	
Spirinchus thaleichthys pop. 2 longfin smelt - San Francisco Bay-Delta DPS	AFCHB03040	Endangered	Threatened	G5TNRQ	S1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sternula antillarum browni California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G4	S1	SSC
Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	
Xanthocephalus xanthocephalus yellow-headed blackbird	ABPBXB3010	None	None	G5	S3	SSC

Record Count: 65

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Contra Costa County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., *placing a dam upstream of a fish population* even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Salt Marsh Harvest Mouse Reithrodontomys raviventris Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/613	Endangered

Birds

NAME	STATUS
California Least Tern Sternula antillarum browni Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
California Ridgway's Rail Rallus obsoletus obsoletus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4240	Endangered
Western Snowy Plover Charadrius nivosus nivosus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo Coccyzus americanus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) Masticophis lateralis euryxanthus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5524	Threatened

Northwestern Pond Turtle Actinemys marmorata — Proposed Threatened

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/1111

Amphibians

NAME	STATUS

California Red-legged Frog Rana draytonii — Threatened

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/2891

Foothill Yellow-legged Frog Rana boylii — Threatened

There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/5133

Fishes

NAME	STATUS

Tidewater Goby Eucyclogobius newberryi — Endangered

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/57

Insects

NAME	STATUS

Monarch Butterfly Danaus plexippus — Proposed Threatened

Wherever found

There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/9743

Flowering Plants

NAME	STATUS

Pallid Manzanita Arctostaphylos pallida — Threatened

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/8292

Santa Cruz Tarplant Holocarpha macradenia — Threatened

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6832

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The data in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Bald and Golden Eagle information is not available at this time

Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report
On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (FWS).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds

- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Migratory bird information is not available at this time

Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE

R4SBAx

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Appendix C
Observed Species

Reconnaissance Level Surveys conducted August 14, 2025

Plant Species Observed

Scientific Name	Common Name
Aesculus californica	California buckeye
Baccharis pilularis	Coyote brush
*Cedrus deodara**	Deodar cedar
Citrus limon	Lemon tree
*Conium maculatum**	Poison hemlock
*Ficus ssp**	Fig tree
*Foeniculum vulgare**	Sweet fennel
*Hedera helix**	English ivy
Juglans nigra	Black walnut
Oenanthe sarmentosa	Water parsley
*Olea europaea**	Olive tree
*Pyrus ssp.**	Pear tree
*Populus nigra**	Lombardy poplar
Quercus agrifolia	Coast live oak
*Raphanus sativus**	Wild radish
*Rubus armeniacus**	Himalayan blackberry
*Rumex crispus**	Curley dock
Salix lasiolepis	Arroyo willow
Toxicodendron diversilobum	Poison oak
Umbellularia californica	California bay

*Non-native

Wildlife Species Observed

Scientific Name	Common name
Birds	
Cathartes aura	Turkey vulture
Streptopelia decaocto	Eurasian collard-dove
Aphelocoma californica	California scrub jay
Corvus brachyrhynchos	American crow
Poecile rufescens	Chestnut-backed chickadee
Passer domesticus	House sparrow
Mammals	
Sciurus niger	Fox squirrel
Odocoileus hemionus	Mule deer

Appendix D
Representative Photos

4301 Appian Way, El Sobrante
Photos from 8/14/25 Site Visit

Photo 1. Residence.

Photo 2. Driveway adjacent to residence.

Photo 3. Grassland behind residence.

Photo 4. Appian Creek Riparian Corridor. Facing north.

Photo 5. Riparian Corridor. Facing south.

GEOTECNIA
Consulting Geotechnical Engineers

2422 Providence Court
Walnut Creek, CA 94596
Phone: (510) 913-1067
Fax: (925) 465-5650
Email: Luis@geotecnia.com
Web Site: www.geotecnia.com

August 12, 2024

Mr. Shakil Ali (via e-mail at shakilali@sbcglobal.net)
2021 Elderberry Drive
El Sobrante, California 94582

Subject: **Executive Summary of Geotechnical Study**
Proposed 8-Unit Residential Development at 4301 Appian Way
El Sobrante, California
Geotecnia Project No. 244073

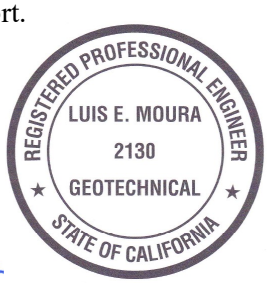
Hi Ali:

This letter presents an executive summary of my geotechnical study for the above-referenced project. The purpose of this executive summary is only to highlight some of the key findings and recommendations of the study. For additional details, please refer to the enclosed report dated August 12, 2024.

The main finding from my study was that the site is underlain by highly expansive soils. In my opinion, the proposed buildings should be supported on mat foundations and the rear portion of the rear building and any required retaining walls may need to be supported on drilled piers. It is also my opinion that the potential for liquefaction at the site is low. The enclosed report provides recommendations for seismic design criteria, grading, foundations, retaining wall lateral earth pressures, exterior concrete slabs on grade, flexible (asphalt) pavements, drainage, and other geotechnical criteria to assist your design team in preparing the plans for the proposed development.

Please call me on my cell phone (510-913-1067) if you have any questions about this executive summary or the enclosed report.

Sincerely,
GEOTECNIA



Luis E. Moura, Principal [08/12/2024]
C.E., G.E., F.ASCE

Enclosure: Geotechnical Report Dated August 12, 2024

REPORT
GEOTECHNICAL STUDY
Proposed 8-Unit Residential Development at 4301 Appian Way El Sobrante, California

August 12, 2024

Prepared for:

Mr. Shakil Ali
2021 Elderberry Drive
San Ramon, California 94582

Prepared by:

GEOTECNIA
Consulting Geotechnical Engineers
2422 Providence Court
Walnut Creek, California 94596-6454
(510) 913-1067
LuisMoura@Astound.net
www.Geotecnia.com

Project Number 244073

Luis E. Moura, Principal [08/12/2024]
C.E., G.E., F.ASCE

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INTRODUCTION

Purpose

GEOTECNIA completed a geotechnical study for the proposed 8-unit residential development at 4301 Appian Way in El Sobrante, California. The purposes of this study have been to (1) evaluate the geologic and geotechnical conditions at the site, and (2) provide geotechnical criteria for design of the proposed development.

Scope

The scope of our services was outlined in our Professional Service Agreement dated June 28, 2024. Our work included performing a site reconnaissance visit; reviewing selected geotechnical and geologic data and published geologic, fault, and seismic hazard maps of the site vicinity; drilling and sampling five borings at the site to depths ranging from 19 to 21.5 feet below the ground surface; testing selected samples of the surficial soils recovered from the borings for Atterberg limits in the laboratory; conducting geotechnical interpretations and engineering analyses; and preparing this report.

This report contains the results of our study, including findings regarding surface and subsurface conditions; conclusions pertaining to site-specific geotechnical conditions and geologic hazards; and geotechnical recommendations for design of the proposed development.

The site location relative to existing streets is shown on Plate 1 – Site Location Map. The boring locations are depicted relative to the street, site boundaries, existing buildings, and proposed buildings on Plate 2 – Boring Location Map. The logs of the borings are displayed on Plates 3-7 – Logs of Borings B-1 through B-5. Explanations of the symbols and other codes used on the logs are presented on Plate 8 – Soil Classification Chart and Key to Test Data. Results of the 8 Atterberg limits tests are presented on Plate 9 – Plasticity Chart. Plates 1-9 are included in Appendix A.

References consulted during this study are listed in Appendix B. Details regarding the field exploration and laboratory testing programs appear in Appendix C. A distribution list of the report recipients is included in Appendix D.

Project Description

The proposed project consists of removing the existing house and detached garage at the site and building a new, 8-unit residential development with associated driveways and parking areas. The building closest to the street will have five units (Units 1-5) and the building at the rear will have three units (Units 6-8). Each building will be a 3-story structure with a garage at the lower levels; the rest of the lower levels will be built up to provide an architectural separation from the garages. No other project details were known at the time this report was submitted.

FINDINGS

Site Description

The project site consists of a mostly flat lot with an existing house and detached garage near the front of the property at 4301 Appian Way in El Sobrante, California, at the approximate location shown on Plate 1. The rear of the site slopes down to a creek that flows to the southwest.

Geologic Conditions

The site is within the Coast Ranges Geomorphic Province, which includes the San Francisco Bay and the northwest-trending mountains that parallel the coast of California. These features were formed by tectonic forces resulting in extensive folding and faulting of the area. The oldest rocks in the area include sedimentary, volcanic, and metamorphic rocks of the Franciscan Complex, and sandstone, shale, and conglomerate of the Great Valley Sequence. These units are Jurassic to Cretaceous in age and form the basement rocks in the region.

A published geologic map of the area (Dibblee, 1980) shows that the site vicinity is underlain by Quaternary alluvial soils. The nearest active fault is the Type-A Hayward Fault, located about 1.2 miles (2 kilometers) southwest of the site (CDMG, 1993).

Earth Materials

The five borings drilled for this study encountered predominantly clay soils, although minor lenses of clayey sand were encountered in some of the borings. The subsurface conditions encountered in the borings are summarized below, starting at the ground surface. Detailed descriptions of the materials encountered as well as the test results are shown on Plates 3-9 in Appendix A. The borings were backfilled with cement grout in accordance with the terms of our annual permit # PT0034479 with the Contra Costa County Environmental Health Division.

We encountered a 2.5- to 3-foot-thick surficial fill layer consisting of medium stiff to stiff lean clay in Borings B-3 and B-5. Samples of the surficial clay fill soils tested had Plasticity Indexes (PIs) ranging from 19 to 23 percent, a pocket penetrometer shear strength of 2,700 pounds per square foot (psf), and Standard Penetration Test (SPT) blow counts (N-values) ranging from about 8 to 12 blows per foot (bpf).

Underlying the surficial fill layer in Borings B-3 and B-5 and from the ground surface in the other borings, we encountered predominantly stiff to very stiff lean clay, sandy lean clay, fat clay, and sandy fat clay extending to the maximum depth explored (21.5). Samples of the native clay soils tested had PIs ranging from 22 to 33 percent, pocket penetrometer shear strengths ranging from about 2,000 to over 4,500 psf, and N-values ranging from about 11 to 32 bpf.

Groundwater

We measured the groundwater surface at a depth of 18 feet in Boring B-1 at the time of drilling; however, no free groundwater was encountered in the other four borings at the time of drilling. The groundwater level is anticipated to fluctuate with changes in annual and seasonal precipitation, irrigation, pumping, and other factors.

CONCLUSIONS

General

The primary geotechnical considerations associated with design and construction of the proposed development are (1) the presence of highly expansive soils; and (2) seismic shaking during earthquakes. These items are addressed in greater detail below.

Based on the results of our study, we recommend in a subsequent section of this report that the proposed buildings be supported on mat foundations, which means that the proposed garage concrete slab-on-grade floors will be part of the mat foundations. The rest of the living spaces at the lower levels of the units may be framed to create a living space higher than the garage floor.

If the rear of the proposed 3-unit building will be within 15 feet of the top of the downslope (creek bank), the rear of the mat foundation supporting that building should be supported on drilled piers to prevent lateral movement of the building due to long-term slope creep.

In our opinion, the proposed driveways and parking areas should consist of pavers instead of either Portland cement or asphalt concrete. Since the on-site clay soils are highly expansive (see subsequent section), cracking and differential vertical movements of the driveway and parking area surfaces are likely to occur and pavers would be easier to repair than either Portland cement or asphalt concrete pavements.

It is also our opinion that the Client should consider using pavers or other surfaces such as compacted decomposed granite for exterior walkways and patios to avoid the potential cracking and differential movements of concrete flatwork due to expansive soil behavior.

Presence of Expansive Soils

It is our opinion that the main geotechnical condition that could impact the design of the proposed development is the presence of expansive soils at the site. The results of our field exploration and laboratory testing program indicate that the surficial soils at the site are expansive. The potential for expansion is tabulated at the top of page 4 as a function of the PI. As shown in the table, the clay soils encountered in the borings drilled at the site (with a PI of 19-33 percent; see Plate 8) have a moderate to high potential for expansion. For purposes of this

report, we refer to the in-situ soils as highly expansive since the average of the 8 PIs was about 26 percent.

Approximate PI Range	Expansion Potential
<12	Nil
12-15	Low
15-25	Moderate
25-35	High
>35	Very High

Expansive soils tend to swell with increases in moisture content and shrink with decreases in moisture content. These moisture fluctuations typically occur in the upper 4 feet of the clay soils during annual and seasonal variations in precipitation. Moisture fluctuations can also occur from irrigation, changes in site drainage, or the presence or removal of trees. As the soil shrinks and swells, improvements supported on the expansive soils may fall and rise. These movements may cause cracking and vertical and horizontal deformations of the improvements.

When expansive soil behavior occurs on slopes, such as at the rear of the site, there is a component of movement parallel to the downslope direction within about 15 feet from any downslope. Slope creep is a slow process, typically involving a small fraction of an inch per year (about 0.1 inches or less per year); however, this movement accumulates over the years and can result in several inches of lateral movement over the life of a structure, in addition to the differential vertical movements.

Other Geologic Hazards

It is our opinion that the potentials for liquefaction, seismic compaction, and lateral spreading are low at the site because (a) no loose, saturated granular soils were encountered in the five borings drilled for this study, and (b) the site is underlain by predominantly stiff to very stiff clay soils. The potentials for landsliding, fault rupture and creep, and earthquake shaking are discussed below.

Landsliding

The gradient at the site is relatively gentle and the site is underlain predominantly by stiff to very stiff clay soils. In the sloping rear portion of the site near the creek, our closest two borings (B-1 and B-2) encountered predominantly very stiff clay soils and an 18-inch-thick layer of medium dense clayey sand, which are not subject to landsliding, in our opinion. Furthermore, during our site reconnaissance, we did not observe evidence of deep-seated, active instability and the groundwater surface is generally deeper than 18 feet (the groundwater depth measured in our Boring B-1). Based on the above discussion, it is our opinion that the potential for landsliding at the site is low.

Fault Rupture

The property does not lie within the Alquist-Priolo Earthquake (Special Study) Zone associated with any active fault. As discussed above, the nearest active fault is located about 1.2 miles southwest of the site. No active faults are shown crossing the site on reviewed published maps, nor did we observe evidence of surface fault rupture during our study. Therefore, we conclude that the potential risk for damage to the planned improvements at the site due to surface rupture from faults is low.

Earthquake Shaking

Earthquake shaking results from the sudden release of seismic energy during displacement along a fault. During an earthquake, the intensity of ground shaking at a particular location will depend on several factors including the earthquake magnitude, the distance to the zone of energy release, and local geologic conditions. We expect that the site may be exposed to moderate to strong earthquake shaking during the life of the improvements since the site is only 1.2 miles from a major Type-A Fault. The recommendations contained in the currently enforced version of the applicable building code should be followed for reducing potential damage to the structures from earthquake shaking.

RECOMMENDATIONS

General

As discussed above, the foundations for the proposed buildings should consist of mat foundations. If the rear of the proposed 3-unit building will be within 15 feet of the top of the creek bank, drilled piers should be used to support the rear portion of the mat foundation supporting that building. If any retaining walls will be built along the creek bank, they should also be supported on drilled piers. Recommendations for mat foundations and drilled piers are included in subsequent sections of the report.

We also recommend that any interior or exterior concrete flatwork be designed for expansive soil conditions to reduce the potential for cracking and differential vertical and horizontal deformations of those improvements. Recommendations and design guidelines are presented in subsequent sections of the report for concrete slabs on grade.

In addition, the design of the proposed improvements should consider the large lateral loads and inertia forces from the structures and retained earth during strong seismic shaking at the site in accordance with the latest applicable codes, as appropriate.

Seismic Design

The seismic design criteria to evaluate the earthquake lateral loads may be calculated using the procedures in the building code assuming a Class-D site. We used the online ground motion parameter calculator provided by the American Society of Civil Engineers (ASCE) to estimate some of the seismic design criteria using a Class-D site and the site's geographical coordinates, based on the ASCE/SEI 7-16 and 7-22 standards. On that basis, we tabulated below the values for the mapped spectral acceleration for short periods (S_S); the mapped spectral acceleration for a 1-second period (S_1); the design spectral acceleration for short periods (S_{DS}); and the design spectral acceleration for a 1-second period (S_{D1}). The structural engineer should use the appropriate values from the table below for the applicable ASCE/SEI standard.

ASCE/SEI Standard	S_S	S_1	S_{DS}	S_{D1}
7-16	2.433	0.927	1.622	N/A
7-22	2.590	1.050	1.600	1.440

Site Preparation and Grading

Clearing

Areas to be graded or excavated should be cleared of topsoil, debris, vegetation, wood, concrete, bricks, roots, stumps, and deleterious material, as applicable. The cleared materials should be removed from the site or stockpiled for use in landscaped areas, as appropriate.

Over-excavations and Subgrade Preparation

Portions of excavations for new mat foundations, exterior flatwork, or the proposed driveways and parking areas with loose or soft soils, or areas where large tree stumps or roots are removed and the soil is disturbed, should be over-excavated. The actual depth and extent of excavation should be approved in the field by a representative of GEOTECNIA prior to placement of fill, rebar, or other improvements. Difficulty in achieving the recommended minimum degree of compaction described below should be used as a field criterion by our representative to identify areas of weak soils that should be removed and replaced as engineered fill or with lean concrete.

Exposed soils designated to receive select fill or backfill should be cut to provide a level bench, scarified to a minimum depth of 6 inches, brought to at least 3 percent over the optimum moisture content, and compacted to at least 90 percent relative compaction, in accordance with the ASTM D1557 test method. Relative compaction refers to the in-place dry density of a soil expressed as a percentage of the maximum dry density of the same material, as determined by ASTM D1557. The subgrade soils should be kept moist until the fill or concrete is placed.

Fill and Backfill Materials

The in-situ clay soils are not suitable for reuse as select (non-expansive) fill or backfill, except for the upper 12 inches above backdrains as discussed later in this report. If additional import, select fill or backfill materials are required, they should have a PI of 12 or less, should have no particles or lumps greater than 3 inches in largest dimension, and should preferably be granular soils (sand, gravel, or sand/gravel mixtures such as AB). Import select fill materials should be approved by a representative of GEOTECNIA prior to use.

Fill and backfill materials should be placed in level lifts not exceeding 9 inches in loose thickness. Each lift should be brought to at least the optimum moisture content, and compacted to at least 90 percent relative compaction, in accordance with the ASTM D 1557 test method. The upper 3 feet of fill beneath slabs should be compacted to at least 95 percent relative compaction. Relative compaction refers to the in-place dry density of a soil expressed as a percentage of the maximum dry density of the same material, as determined by ASTM D1557.

Temporary Slopes, Shoring, and Underpinning

Temporary slopes higher than 4 feet should be constructed in accordance with applicable codes and regulations. The stability of temporary slopes and shoring design, if required, are the responsibility of the contractor. GEOTECNIA will continue to be available to assist the contractor or shoring designer as required.

Foundations

Mat Foundations

A representative of GEOTECNIA should check the bottoms of the mat foundation excavations—prior to the placement of any forms, AB or backfill, crushed rock/gravel, moisture barrier, or steel reinforcement—to evaluate the appropriate depth for the earth materials encountered and determine if some areas need over-excavation or re-compaction. If too dry, the subgrade soils should be thoroughly moistened to at least 3 percent over their optimum moisture content and maintained in that condition until the crushed rock/gravel layer is placed and compacted under the mat slab. If there is a time gap greater than two days between subgrade preparation and placement and compaction of the crushed rock/gravel layer, the contractor must keep the subgrade soils moist by sprinkling them, so they are not allowed to dry.

The mat foundations should be supported on a minimum of 12 inches of AB compacted to at least 95 percent relative compaction. A representative of GEOTECNIA should check and probe the top of the compacted AB layer—prior to the placement of any forms, crushed rock/gravel, moisture barrier, or steel reinforcement—to confirm that it was adequately compacted.

We recommend using the following allowable bearing pressures: 1,500 pounds per square foot (psf) for dead loads, 1,800 psf for dead plus sustained live loads, and 2,300 psf for total loads, including wind and seismic forces. We anticipate that a mat foundation designed and constructed in accordance with my recommendations will experience total static settlements less than 1 inch and differential settlements less than ½ inch over a 30-foot span. The modulus of subgrade reaction is estimated to be about 20 pounds per cubic inch.

We suggest that the mat slab should be at least 10 inches thick and reinforced with two grids of at least 0.625-inch-diameter (#5) reinforcing bars placed at a maximum of 16 inches on center or equivalent, each way, near the top and bottom of the slab; however, the actual slab thickness and amount of reinforcement should be determined by the project structural engineer. We also recommend assuming 5-foot edge cantilevers and 15-foot intermediate spans in the design of the mat slab reinforcement.

Portions of the mat slab without flooring, if applicable, should be provided with crack-control joints—constructed before the concrete hardens—at a spacing of not more than 10 feet in each direction, and the shapes of the slab sections between crack-control joints should be as close to squares as possible, to help reduce the potential for cracking of the slab outside of the crack-control joints.

If piping is installed beneath the mat foundation, flexibility should be provided to protect the pipes from differential movements of the soils beneath the relatively stiffer mat slab.

The mat should be adequately waterproofed to reduce the potential for moisture penetration through the slab. The waterproofing could also include special additives to the concrete mix (such as Xypex or equivalent) to help make the concrete self-sealing in case minor cracks develop. A minimum 15-mil-thick plastic membrane should be placed over at least 6 inches of crushed rock or gravel graded such that 100 percent will pass the 1-inch sieve and none will pass the No. 4 sieve beneath the mat slab, and the contractor should exercise extra caution to help protect the membrane from tears during construction. This crushed rock or gravel layer is in addition to the 12-inch-thick AB layer recommended above. If tears occur during rebar placement, the torn areas should be taped with adequate overlaps in accordance with the manufacturer's specifications. The crushed rock/gravel layer should be compacted with at least three passes of a vibratory plate compactor.

Resistance to lateral loads can be obtained using an allowable passive pressure equivalent to that provided by a fluid weighing 300 pounds per cubic foot (pcf) against the sides of the mat, and a base friction coefficient of 0.20 (between concrete and the plastic membrane) multiplied by the net vertical dead load. These values include a safety factor of 1.5 and may be used in combination without reduction. Additional lateral resistance may be provided by the drilled piers and passive resistance against any retaining walls along the perimeter of the mat foundation, as applicable.

Drilled Piers

Drilled piers should be at least 16 inches in diameter and extend to a depth of at least 14 feet below the ground surface or bottom of the grade beam, whichever is deeper. The actual pier depth should be determined in the field by a representative of GEOTECNIA during pier drilling. The foundation subcontractor should provide a unit cost for piers that extend deeper (additional charge) or are shallower (cost deduction) than the assumed depths. The planned improvements supported on drilled piers are anticipated to settle less than ¾ inch. Differential settlements are anticipated to be less than ½ inch over a 20-foot span.

The drilling subcontractor should anticipate that hard drilling conditions may be encountered if the piers extend below the maximum depths explored in the borings. The drilling subcontractor should review our boring logs (Plates 3-7) and make an independent assessment of the subsurface conditions for purposes of pier drilling. If refusal conditions are encountered above the design pier depth during drilling, both GEOTECNIA and the project structural engineer should be contacted to evaluate the reduced capacity of the shorter pier(s) and determine the need for additional piers.

The piers should be spaced at least three pier diameters center to center, and the above minimum recommended pier depth should be checked against the required depths to resist axial loads. The required pier depth should be the longest of the above-recommended minimum penetration or the depth required to resist axial loads as discussed below.

Piers should be designed for a maximum allowable skin friction value of 500 psf below a depth of 6 feet for combined dead plus sustained live load. This value, which may be used for both downward and uplift loads and includes a safety factor of 2.0, may be increased by one-third for total loads, including the effects of seismic or wind forces. Skin friction should be disregarded in the upper 6 feet of the piers, and end bearing should be neglected. The weight of the portions of the drilled piers extending below grade should be disregarded for downward loads, but may be added to the skin friction capacity for uplift loads.

The piers would help resist an anticipated uplift pressure of 1,000 psf on the grade beams (for an average PI of 26 percent). The width of the grade beams/footings should be as small as possible and the additional uplift load on the grade beams/footings should be resisted by the combination of the weight of the building, the weight of the grade beams and piers, and the uplift capacity of the piers. Alternately, a gap or some type of collapsible material (at least 3 inches thick) could be provided beneath the grade beams (between piers) to prevent the development of uplift pressures due to expansive soil behavior.

The piers within 15 feet from a downslope should be designed to resist lateral creep forces that can be calculated assuming an equivalent fluid weight of 120 pcf, applied over the upper portions of the piers within 3 feet from the ground surface, and against the underground portions of grade beams, as applicable. The creep pressure should be applied over two pier diameters.

Resistance to lateral loads will be provided by passive earth pressure against each pier and by the bending strength of the pier itself. The estimated lateral capacities and maximum moments in the piers are tabulated below as a function of the allowed deflection of the top of the pier assuming "free head" conditions, and that the piers are 16 inches in diameter and at least 14 feet long. The pier top lateral deflections for loads between the tabulated values may be interpolated from the values given. The tabulated data include a safety factor of 1.0 and depend on the allowable deflection at the top of the pier. For different pier diameters and depths, the lateral capacity as a function of lateral deflection will be different than the tabulated values.

Lateral Deflection (in.)	Lateral Load (kips)	Maximum Moment (ft-kips)
¼	9	29
½	16	51
¾	23	73
1	29	92

The estimated depths to the maximum moment and zero lateral deflection below the tops of the piers are 5.5 and 10 feet, respectively, assuming 16-inch-diameter piers at least 14 feet long.

If groundwater is encountered during pier shaft drilling, it should be removed by pumping, or the concrete must be placed by the tremie method. The tremie pipe should be extended to the bottom of the pier hole and kept below the top of the concrete in the hole as the hole is filled with concrete for the concrete to displace the water upward. If the pier holes are dry, the concrete should not be dropped more than 5 feet vertically to avoid segregation of the cement mix and the aggregate, which would weaken the concrete.

Finally, we recommend that the actual drilled pier depths be at least 6 inches deeper than required, to allow for some sloughing of soils from the upper portion of the pier holes after completion of drilling. If the time between pier drilling and concrete placement is relatively long, the extra pier depth should be on the order of one foot to allow for additional sloughing as a function of time.

Retaining Wall Lateral Pressures

General

Any retaining walls required along the top of the creek bank, if applicable, should be supported on drilled pier foundations designed in accordance with the recommendations presented above. Minimum factors of safety against overturning and sliding of 1.1 (seismic) and 1.5 (static) should be used in the design of retaining walls.

Static Loads

The lateral earth pressure criteria below assume that the backfill materials within the "active zone" consist of import, non-expansive granular fill material (select backfill) instead of the in-situ clays. The active zone includes the entire volume above an imaginary plane inclined at 60 degrees above horizontal from a point one foot behind the bottom of the back of the heel of the retaining wall footing. This may require excavations to replace any clay soils with select fill in the active zone. The long-term lateral earth pressures for the condition where the backfill within the active zone consists of the in-situ highly expansive clays would be higher than the values given below for select backfill due to the creeping nature of the clays. Some of the excavated clays may be re-used as backfill for the upper 12 inches (above the select backfill) to reduce the potential for infiltration of surface water where concrete flatwork or pavements are not provided on the surface behind (above) the walls.

Yielding retaining walls which are free to rotate at the top at least 0.1 percent of the wall height should be designed to resist static "active" lateral earth pressures equivalent to those exerted by a fluid weighing 40 pcf where the backfill is flatter than 4:1, and 50 pcf for backfill at a 2:1 slope. Retaining walls restrained from movement at the top should be designed to resist "at-rest" equivalent fluid pressures equivalent to those exerted by a fluid weighing 60 pcf where the backfill is flatter than 4:1, and 75 pcf for backfill at a 2:1 slope. For intermediate backfill slopes, the lateral equivalent fluid weights may be obtained by interpolating between the above values. Backfill slopes steeper than 2:1 are not recommended.

If the clay soils are not removed from the active zone and replaced with non-expansive backfill as discussed above, the lateral earth pressures above would not apply. Instead, we recommend that the walls should be designed to resist the higher long-term lateral earth pressures equivalent to those exerted by a fluid weighing 120 pcf where the backfill is flatter than 4:1, and 150 pcf for backfill at a 2:1 slope. These higher lateral earth pressures are due to the anticipated long-term creep of the clay soils towards the retaining wall.

The actual condition of the wall may range between active and at-rest. Where the wall is more rigid, such as at and near corners or buttresses, the wall may approach at-rest conditions. Elsewhere, the wall may approach active conditions. The designer should use the most appropriate condition for each section of the wall, or one single value between the values for active and at-rest depending on how much of the wall is closer to active or at-rest conditions.

In addition to lateral earth pressures, retaining walls must be designed to resist horizontal pressures that may be generated by surcharge loads applied at or near the ground surface. Where an imaginary 2H:1V (30-degree) plane projected downward from the outermost edge of a surcharge load or foundation intersects a retaining wall, that portion of the wall below the intersection should be designed for an additional horizontal thrust from a uniform pressure equivalent to one-third and one-half of the maximum anticipated surcharge load for active and at-rest conditions, respectively. For different types of surcharge loads, such as vehicular or other

concentrated loads, we can provide the appropriate lateral surcharge pressures on retaining walls once the geometry and loading conditions are defined.

Seismic Loads

The building code calls for a geotechnical investigation that shall include "*a determination of lateral pressures on basement and retaining walls due to earthquake motions*." Current methods being used, such as the Mononobe-Okabe or the Seed and Whitman methods, include either an inverted triangular distribution or a rectangular distribution for the seismic surcharge pressure. However, recent research indicates that there is no need to include a seismic surcharge pressure if (a) the walls are designed for the at-rest condition, and (b) the conventional factors of safety are applied to the wall design. Furthermore, extensive observations by international teams of seismic experts following recent large earthquakes have not resulted in any documented failures of retaining walls that could be attributed to seismic surcharge pressures.

Based on our current understanding of the state-of-the-art regarding seismic surcharge pressures (Sitar, Mikola, and Candia, 2012), we recommend that (a) no seismic surcharge pressure be used if the walls are designed for the higher at-rest earth pressures; and (b) if the walls are designed for the lower active earth pressures for static conditions, assume the higher at-rest earth pressures and use a factor of safety of 1.1 instead of 1.5 for the seismic-loading condition..

Exterior Concrete Flatwork

We recommend that exterior concrete flatwork be supported on at least 12 inches of AB compacted to at least 95 percent relative compaction under our observation. The AB layer and subgrade preparation should extend at least 12 inches beyond the edges of the exterior slabs in order to help control edge effects. If exterior slabs are not designed for expansive soil conditions, they are likely to experience cracking as well as differential vertical and horizontal movements.

Prior to placing the AB, the clay soils should be excavated as required to provide for the 12-inch layer of AB, and then the exposed subgrade soils should be moisture conditioned to at least 3 percent over the optimum moisture content and compacted to at least 90 percent relative compaction prior to placing the AB layer. If there is a time gap greater than one day between subgrade preparation and placement and compaction of the AB layer, the contractor must keep the subgrade soils moist, so they are not allowed to dry.

Exterior concrete slabs on grade should also be adequately reinforced and structurally separated from any adjacent structures to reduce offsets and cracking caused by differential movement between slab sections and between the structures and slabs. We estimate that differential movements on the order of 1 inch should be anticipated between exterior slabs-on-grade and surrounding structures. Slabs should be provided with crack-control joints at a spacing of not more than 10 feet in each direction, and the shapes of the slab sections between crack-control joints should be as close to squares as possible, to help reduce the potential for cracking of the

slabs outside of the crack-control joints. The reinforcing steel should pass through joints to tie slab sections together. The project structural engineer should use the above criteria as a guideline for design of exterior slabs on grade; however, we recommend using minimum 5-inch-thick slabs reinforced with #4 bars spaced at 16 inches on center, both ways, at the middle of the slabs.

If exterior slabs on grade are not adequately reinforced, they may crack excessively due to expansive soil movements. The Client should expect that the exterior slabs on grade may experience both vertical and lateral movements due to expansive soil behavior or tree-root action, as applicable.

Flexible Pavements

The flexible pavement section presented below is based on a Traffic Index (TI) of 5, which assumes that some truck traffic will be allowed on the pavements (such as garbage trucks and delivery trucks). We also assumed that the pavement subgrade would be prepared in accordance with the recommendations presented in previous sections of this report. Based on the above assumptions, we recommend a minimum of 3 inches of AC over 12 inches of AB, for a total pavement section thickness of 15 inches. The term AC refers to Asphalt Concrete, and the term AB refers to Caltrans Class 2 Aggregate Base, which should have a minimum R-value of 78 and be compacted to at least 95 percent relative compaction. In areas where frequent wheel turning by trucks is expected, reinforced concrete pavements should be considered. In these areas, we recommend using a minimum 6-inch-thick concrete slab reinforced with #5 bars spaced at 12 inches on center, both ways, near the middle of the slab, placed over 12 inches of AB.

Drainage Improvements

General

This section provides a discussion of the considerations associated with collecting and disposing of surface water at the site, both from a geotechnical viewpoint and to attempt to satisfy the requirements of the NPDES.

Gutters, downspouts, collector systems, and surface and subsurface drains should be checked periodically for breaks, leaks, or obstructions. The drainage facilities should be cleaned and maintained as necessary so that they continue to function properly.

Surface Drainage

The surface drainage at the site should include collecting and conveying surface runoff to appropriate outlets, and positive drainage should be provided away from all buildings. Roof downspouts and patio drain inlets should discharge into closed conduits that drain into a closed collector system. Collected runoff should be discharged into the creek at the rear of the site.

Since the soils at the site consist of clay, their permeability is relatively low compared to typical rainfall rates. Therefore, the designer should assume that the percolation rates of the clay soils are likely to prevent significant infiltration during the rainfall event after the soils become saturated.

Subsurface Drainage

Retaining walls should be fully backdrained. The backdrains should consist of a 4-inch-diameter, rigid perforated pipe surrounded by a drainage blanket. The pipe should be placed with the perforations pointing down, and should drain by gravity to a suitable outlet. The drainage blanket should consist of Caltrans Class 2 "Permeable Material." Alternately, the drainage blanket could consist of clean, free-draining crushed rock or gravel, wrapped in a filter fabric such as Mirafi 140N. For interior retaining walls, if applicable, the top of the drainpipe should be at least 6 inches below the lowest adjacent grade (which is typically the finished ground surface or any slabs in front of the wall). For exterior retaining walls, the collected runoff may be discharged through weep holes at the base of the wall, spaced at about 5 feet horizontally, provided that the moisture condition along the base of the wall is acceptable to the owner. The drainage blanket should be at least one foot wide and extend to within one foot of the surface. The uppermost one-foot should be backfilled with compacted in-situ clay soils to exclude surface water. Alternately, a prefabricated drainage structure may be used provided our firm is given the opportunity to review the manufacturer's details for the drain to check that it would perform similarly to a conventional backdrain as described above.

Water collected in retaining wall backdrains may be discharged by gravity through solid pipes or weep holes (as discussed above) to the ground surface along the rear of the site since the volume of water is likely to be fairly small and insignificant compared to surface runoff.

Supplemental Services

For the recommendations in this report to remain valid, GEOTECNIA must continue to be retained to review the geotechnical aspects of the project plans, specifications, and structural calculations to evaluate if they are in general conformance with the intent of our geotechnical recommendations. In addition, GEOTECNIA must continue to be retained to observe the geotechnical aspects of construction, particularly slab subgrade preparation and compaction (before placement of the AB), drilled pier construction (drilling of a few piers and measurement of the depths of all piers), backfill placement and compaction, placement of retaining wall backdrain and subsurface drainage components, as applicable, and to perform appropriate field and laboratory testing.

These services would be performed on an as-requested basis and would be in addition to this geotechnical study. We cannot accept responsibility for conditions, situations, or stages of construction that we are not notified and retained to observe.

If, during construction, subsurface conditions different from those encountered in our exploratory borings are observed, or appear to be present beneath excavations, we should be advised at once so that these conditions may be reviewed and our recommendations reconsidered. The recommendations made in this report are contingent upon our notification and review of the changed conditions.

If more than 18 months have elapsed between the submission of this report and the start of work at the site, or if conditions have changed because of natural causes or construction operations at or adjacent to the site, the recommendations of this report may no longer be valid or appropriate. In such case, we recommend that we review this report to determine the applicability of the conclusions and recommendations considering the time elapsed or changed conditions. The recommendations made in this report are contingent upon such a review.

LIMITATIONS

This report has been prepared for the exclusive use of the Client (Mr. Shakil Ali), as well as his agents and consultants, for the proposed project described in this report. The recommendations in this report should not be applied to structures or locations other than those described in this report. If the proposed construction differs from what has been assumed in this report, our firm should be contacted to evaluate the applicability of the recommendations included in this report to the new scheme. A copy of this report should be given by the current owner to future owners of the subject property, if or when applicable, so they are aware of the geotechnical conditions of the site.

Our services consist of professional opinions and conclusions developed in accordance with generally accepted geotechnical engineering principles and practices. We provide no other warranty, either expressed or implied. Our conclusions and recommendations are based on the information provided to us regarding the proposed construction, review of available data, the results of our field exploration and laboratory testing programs, and professional judgment. Verification of our conclusions and recommendations is subject to our review of the geotechnical aspects of the project plans, specifications, and structural calculations, and our observation of all the geotechnical aspects of construction.

The boring logs represent the subsurface conditions at the locations and on the date indicated. It is not warranted that it is representative of such conditions elsewhere or at other times. Site conditions and cultural features described in the text of this report are those existing at the time of our field exploration program, conducted on July 15, 2024, and may not necessarily be the same or comparable at other times. The locations of our borings were established in the field by reference to existing features at the site and should be considered approximate only.

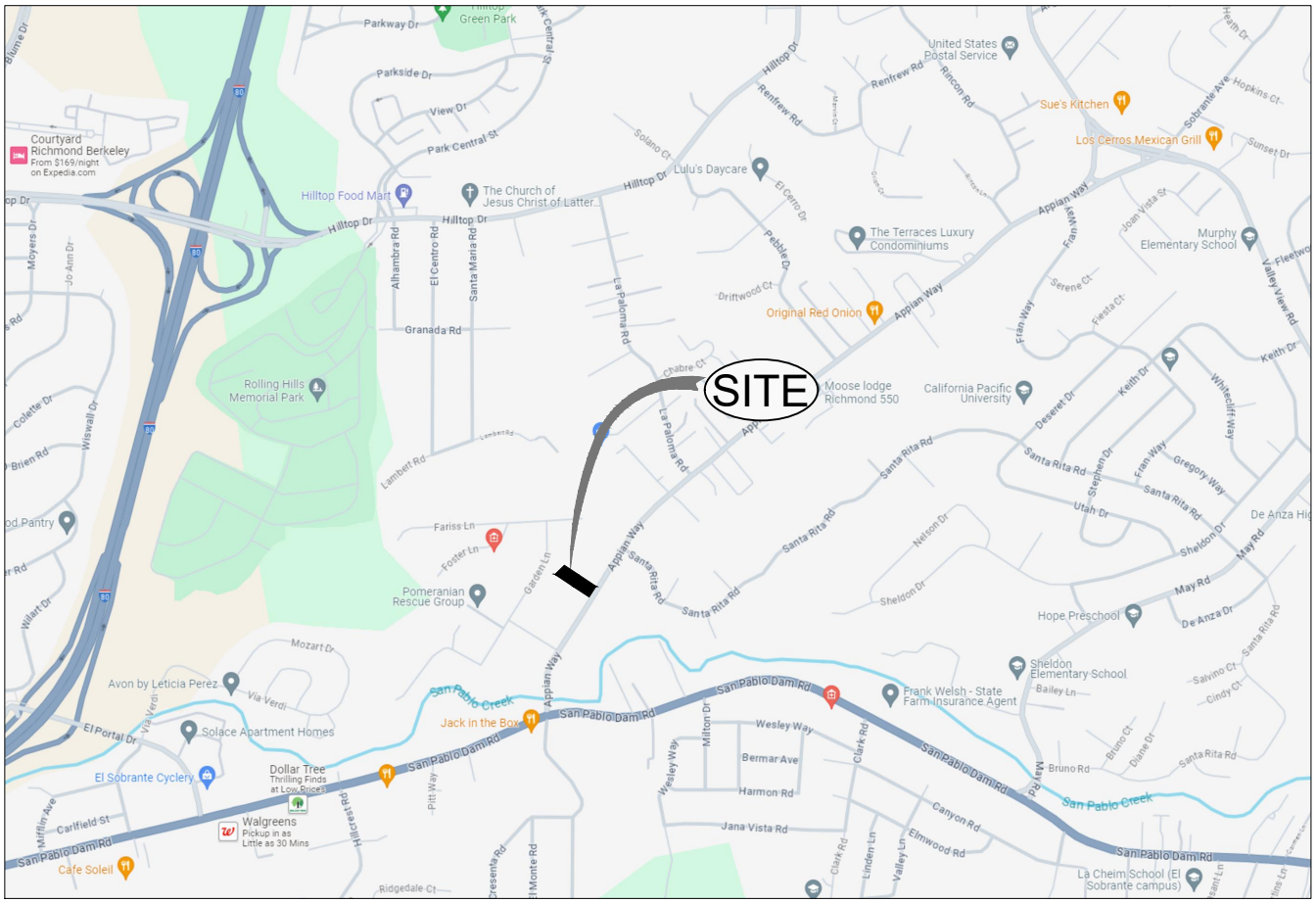
The scope of our services did not include an environmental assessment; an investigation of the presence or absence of hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below, or around the site; nor did it include an evaluation or investigation of the

presence or absence of wetlands. Our services also did not include a corrosivity evaluation of the in-situ soils or an assessment of mold potential. A corrosion engineer may need to be consulted to evaluate the corrosivity of the in-situ soils and import select fill, as appropriate, with respect to concrete and any underground utility materials that may be used at the site. A mold consultant may need to be retained to provide recommendations for mitigating the potential for mold development in the proposed buildings.

APPENDIX A

List of Plates

Plate	1	-	Site Location Map
Plate	2	-	Boring Location Map
Plates	3-7	-	Logs of Borings B-1 through B-5
Plate	8	-	Soil Classification Chart and Key to Test Data
Plate	9	-	Plasticity Chart

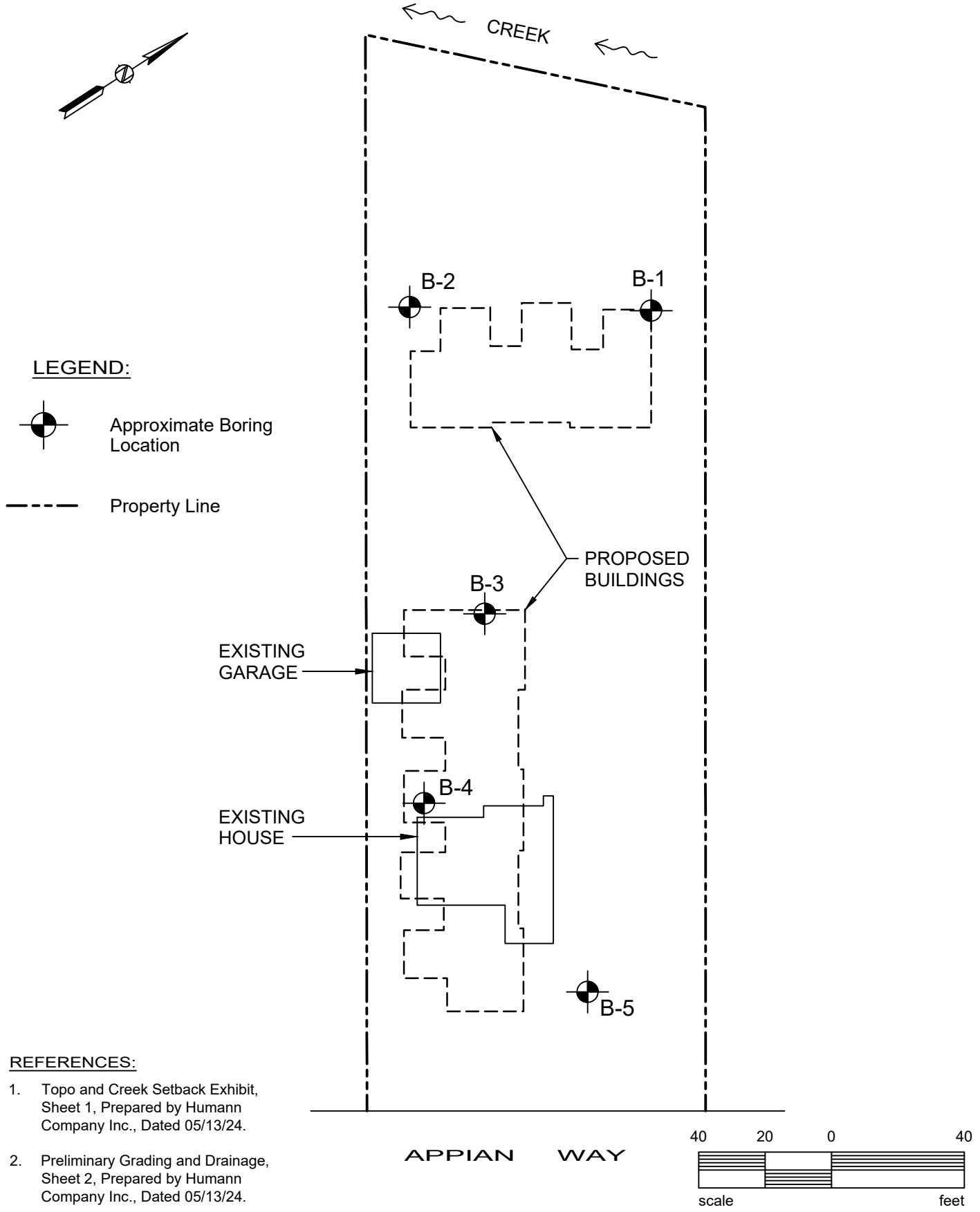


1500 750 0 1500

scale feet

Reference: Google Maps.

GEOTECNIA Consulting Geotechnical Engineers	Job. No: 244073 Appr: Drwn: LPDD Date: AUG 2024	SITE LOCATION MAP Proposed 8-Unit Residential Development at 4301 Appian Way El Sobrante, California	PLATE 1



REFERENCES:

1. Topo and Creek Setback Exhibit, Sheet 1, Prepared by Humann Company Inc., Dated 05/13/24.
2. Preliminary Grading and Drainage, Sheet 2, Prepared by Humann Company Inc., Dated 05/13/24.

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BORING LOCATION MAP

Proposed 8-Unit Residential Development at
4301 Appian Way
El Sobrante, California

PLATE
2

EQUIPMENT: **3.5-inch-diameter solid flight augers**

LOGGED BY: **LEM**

ELEVATION: **

START DATE: **7-15-24**

FINISH DATE: **7-15-24**

Other Laboratory Tests	Pocket Penetrometer (ksf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200 sieve	Blows/Foot *	Sample	DEPTH (FEET)	
							0	FAT CLAY (CH), brown, very stiff, moist, with roots
	>4.5				22		1	
LL = 54, PI = 29; see Plate 9							2	
	4.2				15		3	LEAN CLAY (CL), light brown, very stiff, moist, with roots
LL = 43, PI = 25; see Plate 9							4	
							5	
					14		6	CLAYEY SAND (SC), brown, medium dense, moist, with roots
					15		7	SANDY LEAN CLAY (CL), brown, stiff, moist
	2.0						8	
							9	
							10	FAT CLAY (CH), dark brown, very stiff, moist
	2.7				23		11	
							12	
							13	
							14	
							15	SANDY LEAN CLAY (CL), mottled brown, very stiff, moist
	3.0				23		16	
							17	
							18	▽
							19	
							20	with rock fragments
	3.5				26		21	

Bottom of Boring B-1 at a depth of 21.5 feet.
Groundwater surface measured at a depth of 18 feet at time of drilling.
Backfilled with cement grout.

* Converted to equivalent standard penetration blow counts.

** Existing ground surface at time of investigation.

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LOG OF BORING B-1

Proposed 8-Unit Residential Development at
4301 Appian Way
El Sobrante, California

PLATE 3

EQUIPMENT: **3.5-inch-diameter solid flight augers**

LOGGED BY: **LEM**

ELEVATION: **

START DATE: **7-15-24**

FINISH DATE: **7-15-24**

Other Laboratory Tests	Pocket Penetrometer (ksf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200 sieve	Blows/Foot *	Sample	DEPTH (FEET)	
LL = 50, PI = 29; see Plate 9	>4.5				25		0–3	SANDY FAT CLAY (CH), dark brown, very stiff, damp
	>4.5				20		3–7	SANDY LEAN CLAY (CL), mottled brown, very stiff, moist, with roots
	4.2				21		7–12	SANDY FAT CLAY (CH), dark brown, very stiff, moist
	4.2				32		12–19	SANDY LEAN CLAY (CL), mottled brown, very stiff, moist
	3.0				23		19	Bottom of Boring B-2 at a depth of 19 feet. No free groundwater encountered at time of drilling. Backfilled with cement grout.

* Converted to equivalent standard penetration blow counts.

** Existing ground surface at time of investigation.

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LOG OF BORING B-2

Proposed 8-Unit Residential Development at
4301 Appian Way
El Sobrante, California

PLATE 4

EQUIPMENT: **3.5-inch-diameter solid flight augers**
LOGGED BY: **LEM**
ELEVATION: **
START DATE: **7-15-24**
FINISH DATE: **7-15-24**

Other Laboratory Tests	Pocket Penetrometer (ksf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200 sieve	Blows/Foot *	Sample	DEPTH (FEET)	
					8		0–2	LEAN CLAY (CL), mottled dark brown, medium stiff, damp, with rock fragments and brick fragments
LL = 39, PI = 19; see Plate 9					27		3	FILL
LL = 56, PI = 33; see Plate 9	>4.5						4	SANDY FAT CLAY (CH), mottled brown, very stiff, moist
	3.0				12		5–6	grading to damp, with roots
	>4.5				19		7–9	
	4.2				28		10–13	FAT CLAY (CH), dark brown, very stiff, moist
	3.2				22		14–16	LEAN CLAY (CL), mottled brown, very stiff, moist
	2.0				16		17–21	with CLAYEY SAND (SC) lenses

Bottom of Boring B-3 at a depth of 21.5 feet.
No free groundwater encountered at time of drilling.
Backfilled with cement grout.

* Converted to equivalent standard penetration blow counts.

** Existing ground surface at time of investigation.

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LOG OF BORING B-3

Proposed 8-Unit Residential Development at
4301 Appian Way
El Sobrante, California

PLATE 5

EQUIPMENT: **3.5-inch-diameter solid flight augers**

LOGGED BY: **LEM**

ELEVATION: **

START DATE: **7-15-24**

FINISH DATE: **7-15-24**

Other Laboratory Tests	Pocket Penetrometer (ksf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200 sieve	Blows/Foot *	Sample	DEPTH (FEET)	
LL = 42, PI = 22; see Plate 9	>4.5				23		0–3	LEAN CLAY (CL), dark brown, very stiff, damp
	2.0				13		4–11	SANDY LEAN CLAY (CL), brown, stiff, moist
	3.5				27		12–14	FAT CLAY (CH), brown, very stiff, moist
	3.0				20		15–19	

Bottom of Boring B-4 at a depth of 19 feet.
No free groundwater encountered at time of drilling.
Backfilled with cement grout.

* Converted to equivalent standard penetration blow counts.

** Existing ground surface at time of investigation.

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LOG OF BORING B-4

Proposed 8-Unit Residential Development at
4301 Appian Way
El Sobrante, California

PLATE 6

EQUIPMENT: **3.5-inch-diameter solid flight augers**

LOGGED BY: **LEM**

ELEVATION: **

START DATE: **7-15-24**

FINISH DATE: **7-15-24**

Other Laboratory Tests	Pocket Penetrometer (ksf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200 sieve	Blows/Foot *	Sample	DEPTH (FEET)	
							0	LEAN CLAY (CL), dark brown, stiff, damp, with roots
	2.7				12		1	
LL = 44, PI = 23; see Plate 9							2	FILL
	>4.5				20		3	FAT CLAY (CH), dark brown, very stiff, damp
LL = 50, PI = 29; see Plate 9							4	
							5	SANDY LEAN CLAY (CL), mottled brown, stiff, moist, with CLAYEY SAND (SC) lenses
	2.7				12		6	
	2.5				11		7	
							8	
							9	FAT CLAY (CH), dark brown, very stiff, moist
	3.5				27		10	
							11	
							12	
							13	
							14	
	4.0				29		15	
							16	
							17	
							18	FAT CLAY (CH), brown, very stiff, moist
							19	
	3.0				21		20	
							21	

Bottom of Boring B-5 at a depth of 21.5 feet.
No free groundwater encountered at time of drilling.
Backfilled with cement grout.

* Converted to equivalent standard penetration blow counts.

** Existing ground surface at time of investigation.

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Date: AUG 2024

LOG OF BORING B-5

Proposed 8-Unit Residential Development at
4301 Appian Way
El Sobrante, California

PLATE 7

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS More than Half > #200 sieve	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POOORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS More than Half < #200 sieve	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

UNIFIED SOIL CLASSIFICATION SYSTEM

			Shear Strength, psf / Confining Pressure, psf	
Consol	Consolidation	Tx	2630 (240)	Unconsolidated Undrained Triaxial
LL	Liquid Limit (in %)	Tx sat	2100 (575)	Unconsolidated Undrained Triaxial, saturated prior to test
PL	Plastic Limit (in %)	DS	3740 (960)	Unconsolidated Undrained Direct Shear
PI	Plasticity Index	TV	1320	Torvane Shear
Gs	Specific Gravity	UC	4200	Unconfined Compression
SA	Sieve Analysis	LVS	500	Laboratory Vane Shear
■	Undisturbed Sample (2.5-inch ID)	FS	Free Swell	
◪	2-inch-ID Sample	EI	Expansion Index	
◩	Standard Penetration Test	Perm	Permeability	
⊠	Bulk Sample	SE	Sand Equivalent	

KEY TO TEST DATA

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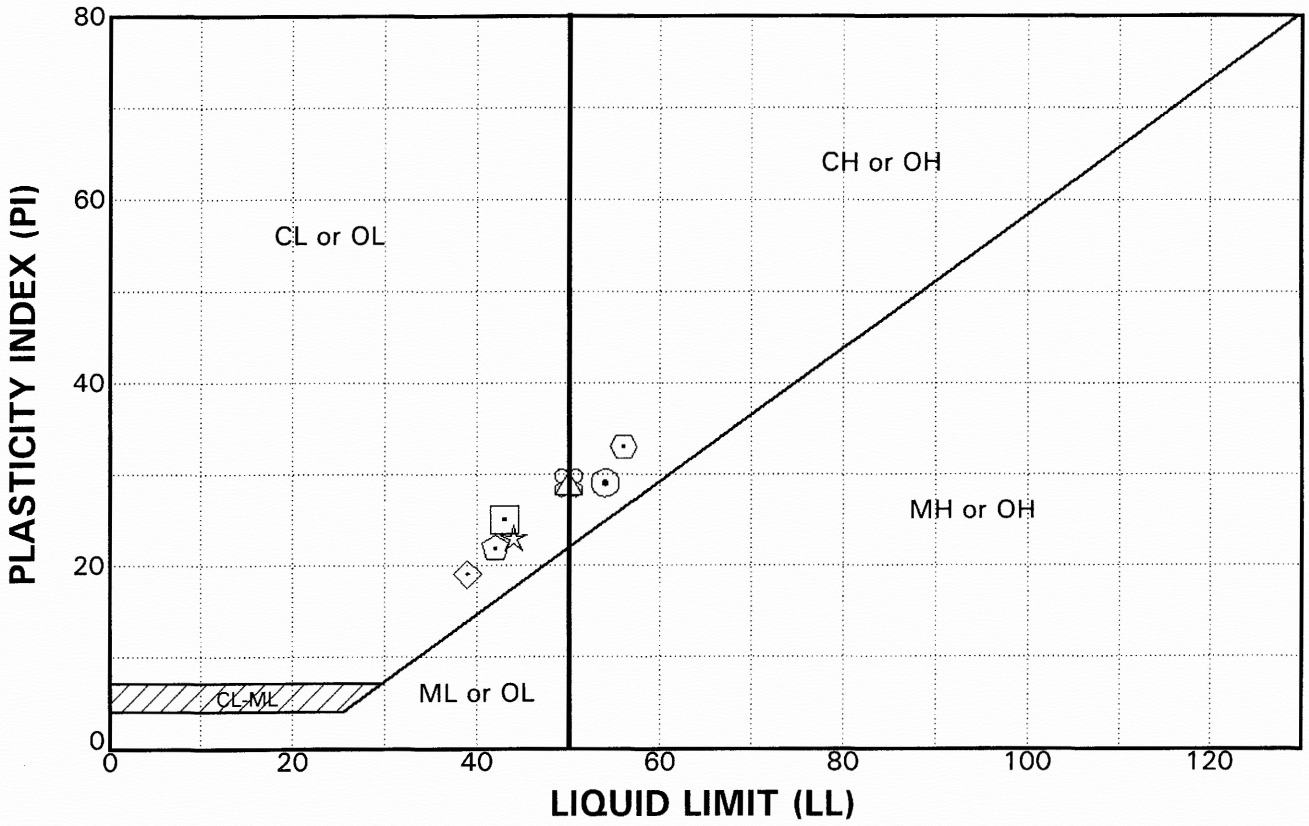
SOIL CLASSIFICATION CHART AND KEY TO TEST DATA
Proposed 8-Unit Residential Development at 4301 Appian Way
El Sobrante, California

PLATE 8



SAMPLE SOURCE	CLASSIFICATION	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX (%)	% PASSING #200 SIEVE
⊙ Bor. B-1 @ 1.5'	Fat Clay (CH)	54	25	29	
⊡ Bor. B-1 @ 3.0'	Lean Clay (CL)	43	18	25	
△ Bor. B-2 @ 1.5'	Sandy Fat Clay (CH)	50	21	29	
◇ Bor. B-3 @ 1.5'	Lean Clay (CL)	39	20	19	
⊙ Bor. B-3 @ 3.5'	Sandy Fat Clay (CH)	56	23	33	
⊙ Bor. B-4 @ 1.5'	Lean Clay (CL)	42	20	22	
☆ Bor. B-5 @ 1.5'	Lean Clay (CL)	44	21	23	
⊠ Bor. B-5 @ 3.0'	Fat Clay (CH)	50	21	29	

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PLASTICITY CHART

Proposed 8-Unit Residential Development at
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El Sobrante, California

PLATE
9

APPENDIX B

List of References

1. American Society of Civil Engineers (ASCE), 2024, *ASCE 7 Hazards Report,* ASCE 7 Hazard Tool.

2. California Division of Mines and Geology (CDMG), 1997, *Active Fault Near-Source Zones,* Department of Conservation, Sheet E-17, Scale ¼ inch = 1 kilometer.

3. CDMG, 1982, *State of California Special Studies Zones, Richmond Quadrangle,* Department of Conservation, Scale 1:24,000, dated January 1.

4. California Geological Survey, 2003, *State of California Seismic Hazard Zones, Richmond Quadrangle, Official Map*, Department of Conservation, Scale 1:24,000, Dated February 14.

5. Dibblee, T.W., Jr., 1980, *Preliminary Geologic Map of the Richmond Quadrangle, Alameda and Contra Costa Counties, California,* United States Geological Survey Open-File Report 80-1100, Scale 1:24,000.

6. Jennings, C.W., 1996, *Preliminary Fault and Geologic Map, State of California,* CDMG) Scale 1:750,000.

7. Sitar, N., Mikola, R. G., and Candia, G., 2012, *Seismically Induced Lateral Earth Pressures and Basement Walls,* ASCE, Geotechnical Engineering State of the Art and Practice, Geotechnical Special Publication No. 226.

APPENDIX C

Field Exploration

Our field exploration consisted of a geologic reconnaissance and subsurface exploration by means of drilling and sampling five borings on July 15, 2024. The borings were drilled and sampled with portable hydraulic equipment at the approximate locations shown on Plate 2.

The logs of the borings are displayed on Plates 3-7. Representative disturbed or relatively undisturbed samples of the earth materials were obtained from the borings at selected or continuous intervals with a 3-inch-diameter, modified California sampler; and a 2-inch-diameter, split-barrel Standard Penetration Test (SPT) sampler. Where two samples were obtained continuously, the larger sampler was used first, and then the smaller sampler was telescoped through the hole left by the larger sampler above.

Penetration resistance blow counts were obtained by dropping a 140-pound hammer through a 30-inch free fall. The sampler was driven up to 24 inches and the number of blows was recorded for each 6 inches of penetration. These blow counts were then correlated to SPT blow counts. The blows per foot recorded on the Boring Logs represent the accumulated number of blows (correlated to SPT blow counts) that were required to drive the sampler the last 12 inches or fraction thereof. A correction factor of 0.66 was used to correct the field blow counts for the modified California sampler.

The shear strength of some of the cohesive soils was estimated in the field using a pocket penetrometer and the results are shown on the Boring Logs. The soil classifications are shown on the Boring Logs and referenced on Plate 8.

Laboratory Testing

We performed Atterberg limits laboratory tests on selected soil samples recovered from the borings. The data from these tests are recorded at the appropriate sample depths on the appropriate Boring Logs (Plates 3-7) and on Plate 9.

APPENDIX D

Distribution

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