

ANTIOCH CALIFORNIA

NOTICE OF PREPARATION

DATE: October 15, 2021

TO: State Clearinghouse
1400 10th Street, Suite 222
Sacramento, CA 95814
(916) 445-0613

FROM: City of Antioch

SUBJECT: Albers Ranch Project
Notice of Preparation of a Draft Environmental Impact Report

LEAD AGENCY: City of Antioch
Community Development Department
Contact: Forrest Ebbs, Community Development Director
P.O. Box 5007
Antioch, CA 94531-5007
(925) 779-7035
planning@ci.antioch.ca.us

PROJECT APPLICANT: Bryan Wenter, Miller, Starr & Regalia

Notice is hereby given that the City of Antioch will be the Lead Agency and will prepare an environmental impact report (EIR) for the proposed Albers Ranch Project. We are requesting comments on the scope of topics addressed in this EIR.

Please provide comments on the scope of the EIR to Forrest Ebbs, Community Development Director, at the address listed above. Due to the time limits mandated by State law, your response must be sent at the earliest possible date, but not later than **5:00 PM on November 15, 2021**. In your response, please identify a contact person in your agency for future correspondence.

A public scoping meeting will be held by the City to inform interested parties about the proposed project, and to provide agencies and the public with an opportunity to provide comments on the scope and content of the EIR. Because of current COVID-19 health emergency, the scoping meeting will be conducted as a teleconference meeting (no physical location).

EIR Scoping Meeting on the Albers Ranch Project
Thursday | October 28, 2021 | 3:00 PM
Teleconference Meeting (Online only – No physical location)
Zoom: <https://us06web.zoom.us/j/81367078075>
Phone: (669) 900-6833 | Webinar ID: 813 6707 8075

As an alternative, the City of Antioch will also stream video and audio of the public scoping meeting at the following webpage; however, the link below does not provide the ability to comment during the meeting:

<https://www.antiochca.gov/za/zoning-administrator-meetings/>

Public comments can be submitted to the Zoning Administrator prior to 3:00 the day of the meeting at the following email address: zoning@ci.antioch.ca.us. All comments received before 3:00 PM the day of the meeting will be provided to the Zoning Administrators at the meeting. Please indicate the agenda item and title in your email subject line. After 3:00 the day of the meeting and during the meeting comments can be submitted directly to the Zoning Administrator through the Zoom webinar.

This EIR Notice of Preparation, the Initial Study, and technical appendices are available online at:

antiochca.gov/environmentaldocs

INTRODUCTION:

The purpose of an EIR is to inform decision-makers and the general public of the environmental effects of a proposed project. The EIR process is intended to provide environmental information sufficient to evaluate a proposed project and its potential to cause significant effects on the environment; examine methods of reducing adverse environmental impacts; and consider alternatives to the proposed project. The Albers Ranch Project EIR will be prepared and processed in accordance with the California Environmental Quality Act (CEQA) and the CEQA Guidelines.

The EIR will generally include the following:

- Description of the project;
- Description of the existing environmental setting for each topic, potential environmental impacts of the project, and mitigation measures;
- Cumulative impacts; and
- Alternatives to the project.

PROJECT LOCATION:

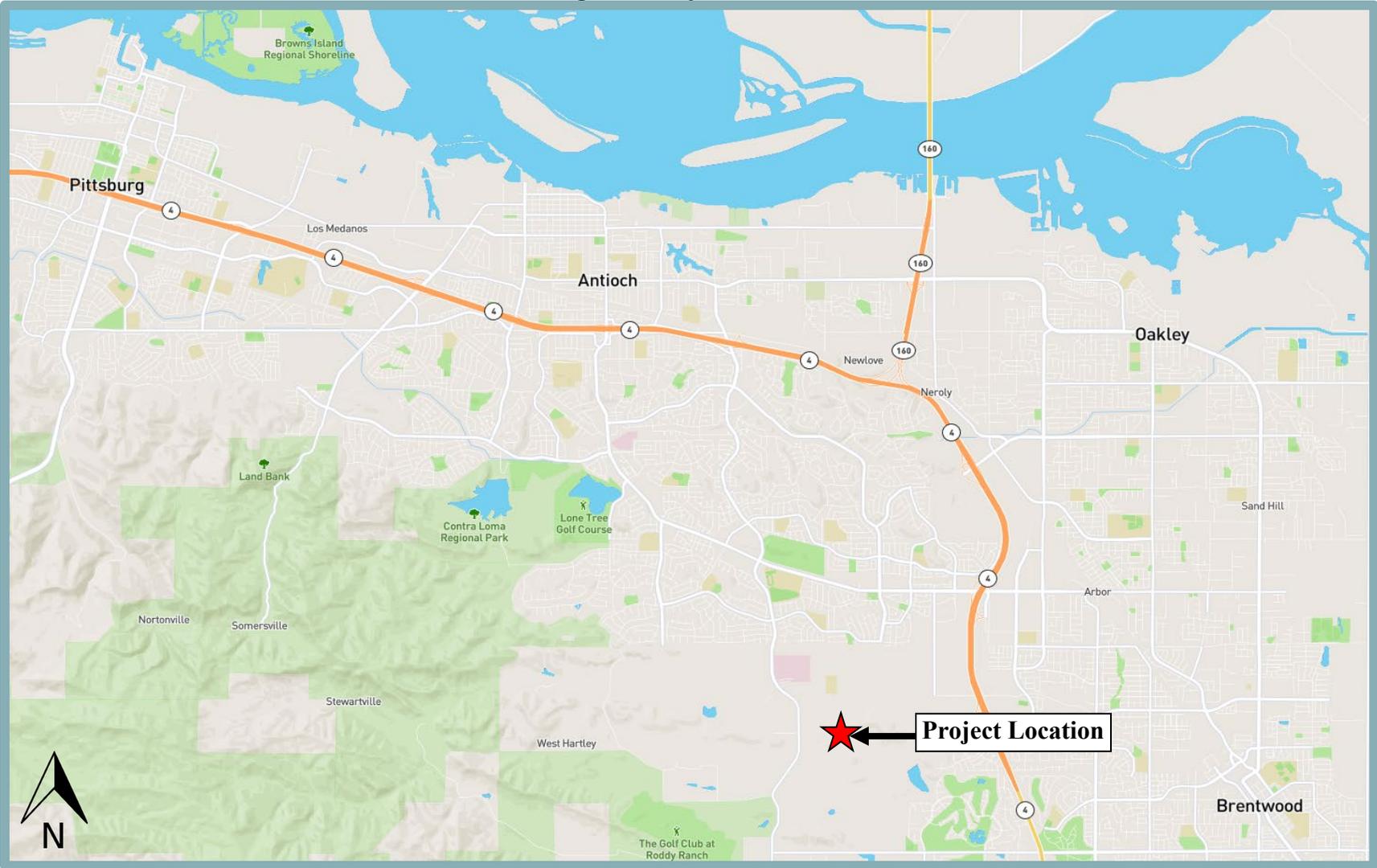
The project site consists of approximately 96.5 acres located east of the Deer Valley Road/Deer Hill Lane intersection in the City of Antioch, Contra Costa County, California. The City of Antioch is within eastern Contra Costa County and is bordered to the north by the San Joaquin River Delta; to the east by the City of Brentwood and the City of Oakley; to the west by the City of Pittsburg and unincorporated portions of Contra Costa County; and to the south by unincorporated portions of Contra Costa County (see Figure 1). The site is identified by Assessor's Parcel Numbers (APNs) 057-042-006 and 057-050-021.

The project site is bordered by the City of Antioch/Contra Costa County line to the south. The City of Antioch/City of Brentwood limit is further east of the site (see Figure 2). Sand Creek is located along the northern border of the site, and State Route (SR) 4 is located approximately 1.44 miles east of the site.

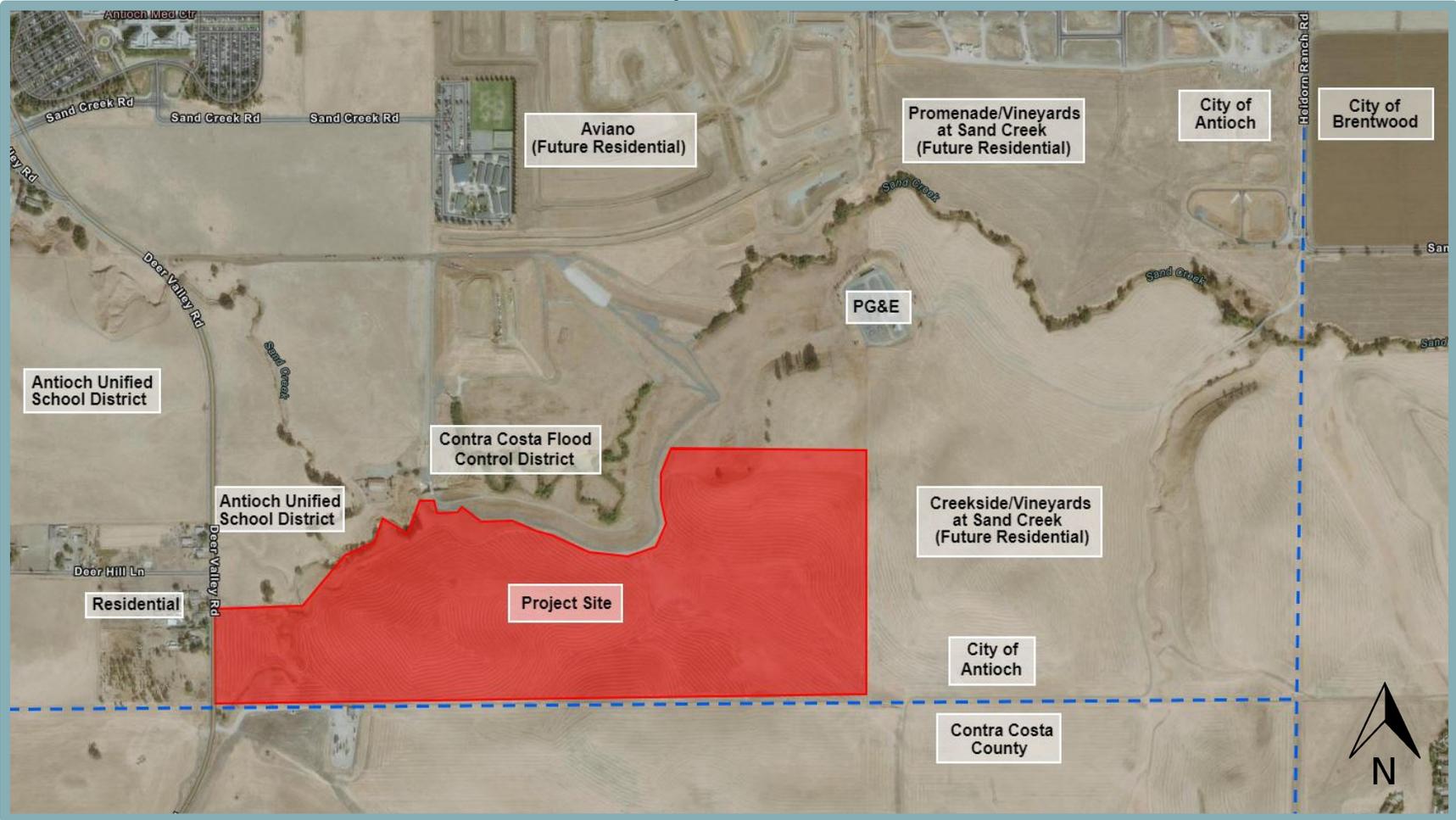
PROJECT SETTING AND SURROUNDING LAND USES:

The project site is situated within the Sand Creek Focus Area of the General Plan, which contains lands designated by the Antioch General Plan for open space, residential, commercial, and mixed-use development. Per the City's General Plan, the majority of the site is designated Hillside, Estate and Executive Residential/Open Space, while the western portion of the site, alongside Deer Valley Road, is designated Commercial/Open Space. The site is zoned Study District.

**Figure 1
Regional Project Location**



**Figure 2
Project Location**



The project site is generally rectangular, with the southern, western, and eastern boundaries linear, and the northern property line meandering in and out as it follows Sand Creek towards the respective property corners as show in Figure 2. Currently, the project site is undeveloped, consisting primarily of non-native vegetation. A reach of Sand Creek, a tributary to Marsh Creek, extends through the western portion of the project site.

The topography of the site is defined by two large knolls within the western and northeastern portions of the site. Elevations on the project site range from approximately 324 feet above mean sea level (msl) at the top of the western knoll, to 175 feet at the southeastern corner of the site. It should be noted that currently, 16.5-foot-wide and 10-foot-wide utility easements are located parallel to each other along the site's western boundary. In addition, a second pair of utility easements extends from Deer Valley Road diagonally toward the southern site boundary.

As shown in Figure 2, the majority of the surrounding area has been approved for residential development. Within the City of Antioch, the area to the north of the site is approved for development with the Aviano Project, the area to the northeast of the site is approved for development with the Promenade/Vineyard at Sand Creek Project, and the area to the east is approved for development for the Creekside/Vineyards at Sand Creek Project.

Surrounding existing uses include rural single-family residential located west of the site, across Deer Valley Road, and Contra Costa County Flood Control District (CCCFCD) infrastructure, Upper Sand Creek Basin (Basin), and vacant Antioch School District property to the north. The CCCFCD's Basin is owned in fee title by the CCCFCD and includes additional CCCFCD rights-of-way in the form of easements along the Basin's south and east side. An existing Pacific Gas and Electric Company (PG&E)-owned parcel with an electrical substation, designated Public/Quasi Public per the General Plan, is located northeast of the site. The area south of the site is undeveloped, consisting of dry farmland outside the City's Sphere of Influence and Planning Area, within unincorporated Contra Costa County.

PROJECT DESCRIPTION:

The proposed project would include development of a multi-generational single-family residential subdivision with 294 units, as well as recreational amenities and associated improvements (see Figure 3). The proposed project would also include future development of an assisted living facility and neighborhood commercial development upon issuance of a Conditional Use Permit (CUP). Development of the single-family residential subdivision, assisted living facility, and neighborhood commercial land uses, including proposed roadways, would total approximately 47.4 acres. The remaining 49.1 acres of the site would be retained as open space.

The project would require City approval of the following: General Plan Amendment, Master Development Plan/Rezone, Development Agreement, and Vesting Tentative Subdivision Map. The details of the proposed project, including required approvals, are described in further detail below.

General Plan Amendment

The proposed project would include a General Plan Amendment to the land use map for the Sand Creek Focus Area of the General Plan to change the portion of the site currently designated Hillside, Estate and Executive Residential/Open Space to Medium Low Density Residential/Open Space. The western portion of the site; designated Commercial/Open Space, will retain the existing designations. The proposed project would also include a General Plan Amendment to the text of the Sand Creek Focus Area of the General Plan in order to add a sub area to the Sand Creek Focus Area called the Albers Ranch Sub Area.

Master Development Plan/Rezone/Development Agreement

The proposed project would require approval of a rezone to change the zoning designation of the site from Study District to Hillside Planned Development (HPD), subject to a Master Development Plan. The Master Development Plan and HPD district would list the development standards applicable to the project site, including setbacks, lot sizes, and building heights for the single-family residential subdivision. The future assisted living facility and neighborhood commercial land uses would be required to comply with the Zoning Ordinance. In addition, the applicant is requesting City approval of a Development Agreement, which would assure the City that the proposed project would proceed to its completion in compliance with the plans submitted by the applicant, and assure the applicant of vested rights to develop the project.

Vesting Tentative Subdivision Map

The proposed project would include a Vesting Tentative Subdivision Map (see Figure 3) to subdivide the project site into 294 single-family lots. Of the 96.5-acre site, only 79.9 acres are considered developable due to site constraints (e.g., slopes greater than 25 percent), three acres of which are proposed for future development of an assisted living facility and neighborhood commercial land uses. Approximately 31.2 acres are proposed for development of single-family residential lots, 13.2 acres would be developed with private streets, and 49.1 acres would be used for parks, open space, recreation, and water quality/detention purposes. Table 1 provides a summary of the proposed land uses.

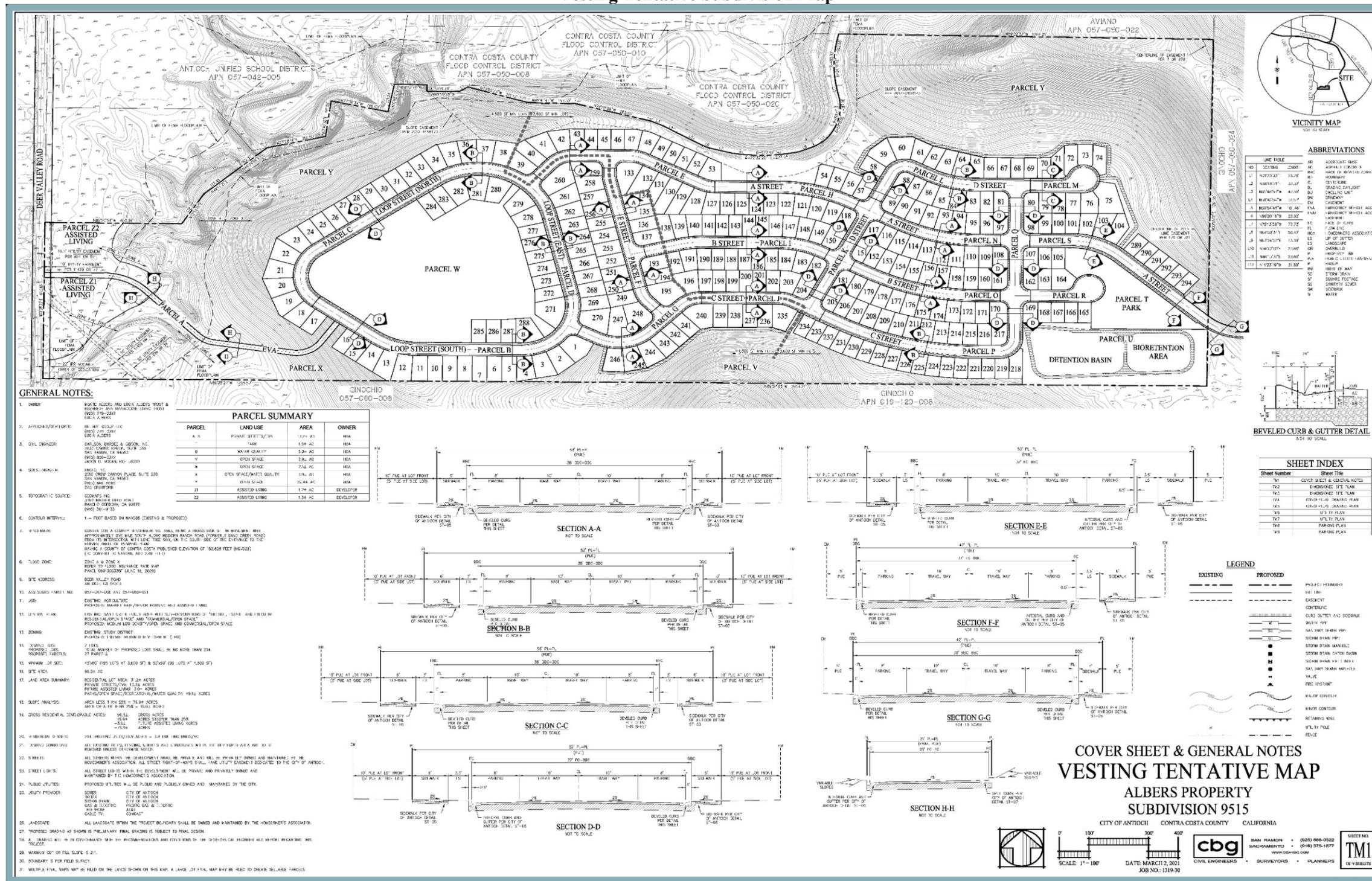
Proposed Land Use	Parcels	Acreage
Single-Family Residential	-	31.2
Private Streets/EVA	A-S	13.2
Parks/Open Space/Recreational/Water Quality	T, V, W, X, Y, U	49.1
Future Assisted Living Facility and Neighborhood Commercial	Z1, Z2	3.0
Total	--	96.5

The areas to remain open space would include the hillside within the northeastern portion of the site, the hillside along the center of the southern site boundary, the upper reaches of the existing knoll within the western portion of the site, and a setback between the future development parcels along Deer Valley Road and the proposed homes associated with Sand Creek.

Single-Family Residential

The proposed single-family residential uses would represent a continuation of other planned development in the project vicinity. The average density of the proposed residential development would be approximately 3.8 dwelling units per acre (294 units/76.9 acres of developable land). Six different models, each with three different elevations, would be constructed. Residential lot sizes would generally transition from larger sizes within the eastern portion of the site, closer to the Creekside/Vineyards at Sand Creek Project, to slightly smaller sizes within the western portion of the site ranging from a minimum of 3,600 square feet (sf) to a maximum of 9,000 sf.

Figure 3
Vesting Tentative Subdivision Map



Access and Circulation

The area to the east of the site is planned for future development with the Creekside/Vineyards at Sand Creek Project, which would include extension of a new roadway, Hillcrest Avenue, to the eastern site boundary. Primary access to the proposed project would be provided by a new on-site roadway connecting to the planned Hillcrest Avenue extension east of the site. The connection to Hillcrest Avenue is contingent upon construction of the Creekside/Vineyards at Sand Creek Project. In the event that the Creekside/Vineyards at Sand Creek Project is not constructed, access to the proposed project may be provided by an alternate roadway connecting the northern portion of the project site to the future Sand Creek Road included as an Irrevocable Offer of Dedication (IOD) as part of the Aviano Project. If the developer desires the optional roadway for development, the developer would need to acquire a portion of the right-of-way from the CCCFCD in order to construct the optional road. The sale of right-of-way is at the CCCFCD discretion. An emergency vehicle access (EVA) only roadway would provide secondary access from Deer Valley Road to the western portion of the project site. Within the project site, all proposed internal streets would be private and would be consistent with applicable City of Antioch design standards. Parking would be allowed on both sides of the internal roadways, providing for a total of 362 spaces. In addition, two covered garage parking spaces would be provided within each residential unit, providing a total of 588 spaces.

Parks, Trails, Open Space, and Landscaping

As part of the proposed project, a total of 41.9 acres would be reserved for parks and recreational facilities and retained as open space (see Figure 4).

Parcel T, located in the southeastern portion of the project site, would include a 1.5-acre park to provide recreational services to the project site. Parcel X, located south of the EVA, would be retained as open space, with a portion of the parcel to be used for water quality/bioretenion purposes. Parcels V, W, and Y would be preserved as open space and would include trails accessible to future residents. Parcel V would be located on the southern border of the project site and would include an open space/maintenance trail. Parcel W is located on the western knoll of the project site surrounded by proposed residential lots and would include an overlook access trail. Parcel Y would be located along the northern portion of the project site and would also include an open space/maintenance trail.

The proposed project would include community trails between lots throughout the project site to provide access to the designated open space/trails in Parcels V, W, and Y. Two community trails, located north of Parcel V, would provide residential access to the designated open space/maintenance trail in Parcel V. Additionally, two community trails, east of Parcel W, would provide residential access to the overlook access trail in Parcel W.

In addition, three community trails, located in the northeast portion of the project site, would provide residential access to the designated open space/maintenance trail in Parcel Y. The designated open space/maintenance trail in Parcel Y would provide community access to Sand Creek. The proposed project would also include an open space picnic area between lots 53 and 54 south of Sand Creek.

Landscaping features would be provided throughout the proposed development area and would conform to the requirements and provisions of Section 9-5.1001 of the City of Antioch Municipal Code. Individual residences would also be landscaped with trees, shrubs, groundcover and some lawns, and would be maintained by the individual owners. Public spaces, open spaces, and private landscaping areas would have an emphasis on drought-tolerant and adaptive plant species.

**Figure 4
Landscape Plans**



CALLOUT LEGEND	
①	OPEN SPACE / MAINTENANCE TRAIL
②	COMMUNITY CONNECTION TO OPEN SPACE TRAILS
③	OVERLOOK ACCESS TRAIL
④	EVA CONNECTION
⑤	PARK AREA, SEE SHEET L-6 FOR ENLARGEMENT
⑥	OPEN SPACE PICNIC AREA

**FIGURE F
LANDSCAPE PLAN
ALBERS RANCH PROPERTY**
CITY OF ANTIOCH CONTRA COSTA COUNTY CALIFORNIA
DATE: NOVEMBER 5, 2020 SCALE: 1" = 300'

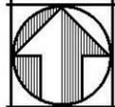
 **cbg** SAN RAMON (925) 866-0322
SACRAMENTO (916) 375-1877
WWW.CBANDG.COM
CIVIL ENGINEERS • SURVEYORS • PLANNERS

IMAGE COURTESY OF VANDERTOOLEN ASSOCIATES

Utilities

Figure 5 illustrates the proposed water, sewer, and stormwater utility improvements associated with the project.

Water supply for the proposed development would be provided by the City. Potable water would be distributed to the project site by an existing 12-inch Zone III trunk line in the future Hillcrest Avenue. The water line would continue south to I Street planned by the Creekside/Vineyards at Sand Creek Project, then head west to the proposed project boundary. The internal private streets within the proposed project would include water lines that would connect to the water line from the Creekside/Vineyards at Sand Creek Project. In addition, a water line would be undergrounded below the proposed EVA road in the western portion of the site, and follow Deer Valley Road north to connect to the City's existing water system (see Figure 5).

Wastewater conveyance for the proposed development would be provided by the City. The proposed project would include construction of sanitary sewer lines beneath the proposed private streets that would connect to I Street in the Creekside/Vineyards at Sand Creek Project. The Creekside/Vineyards at Sand Creek Project includes a main sewer line that would eventually connect to a planned sewer line in Sand Creek Road.

The project site naturally drains to the east. The proposed project would include construction of a series of drain inlets and underground storm drain pipes to capture stormwater runoff from impervious surfaces created by the project. Runoff would be routed to a detention basin and bio-retention basin located within the southeastern portion of the project site (Parcel U). The basin would provide for treatment and detention of captured stormwater runoff.

The stormwater flows would be metered from the basin to match pre-development rates. A discharge line would be constructed into I Street of the Creekside/Vineyards at Sand Creek Project. The proposed EVA road in the western portion of the site would generate a relatively small amount of runoff. The runoff from the EVA road would be collected into a proposed bio-swale within Parcel X and eventually discharge through a new outfall into Sand Creek. Detention of the runoff from the EVA would not be necessary as Sand Creek drains into the Basin.

Electricity for the proposed project would be provided by PG&E. Telecommunication services would be provided by AT&T. Comcast and Astound would provide cable television and internet services to the project site. Dry utilities, electrical, gas, and technology lines would be extended from Sand Creek Road beneath future Hillcrest Avenue to the project site.

The proposed project would not conflict with the existing utility easements located along the site's western boundary or southwestern portion of the site.

Off-Site Improvements

As noted above, should the Creekside/Vineyards at Sand Creek Project not be developed, an alternative roadway to the north may be constructed as part of the proposed project. Figure 6 below illustrates the proposed alternative roadway connection configuration. As shown in the figure, the alternative roadway would connect the northern portion of the site to the future Sand Creek Road, following the eastern boundary of the CCCFCD property and Basin and crossing Sand Creek. Any roadway and associated grading of the alternate roadway near the Basin's main dam and/or saddle dike would require Division of Safety of Dams (DSOD) discretionary approval. In addition, the project applicant would be required to obtain a CCCFCD encroachment permit for any work planned within the CCCFCD right-of-way. The optional roadway was included as part of the Aviano Project and has been analyzed within the associated EIR.

Figure 5
Utility Plan

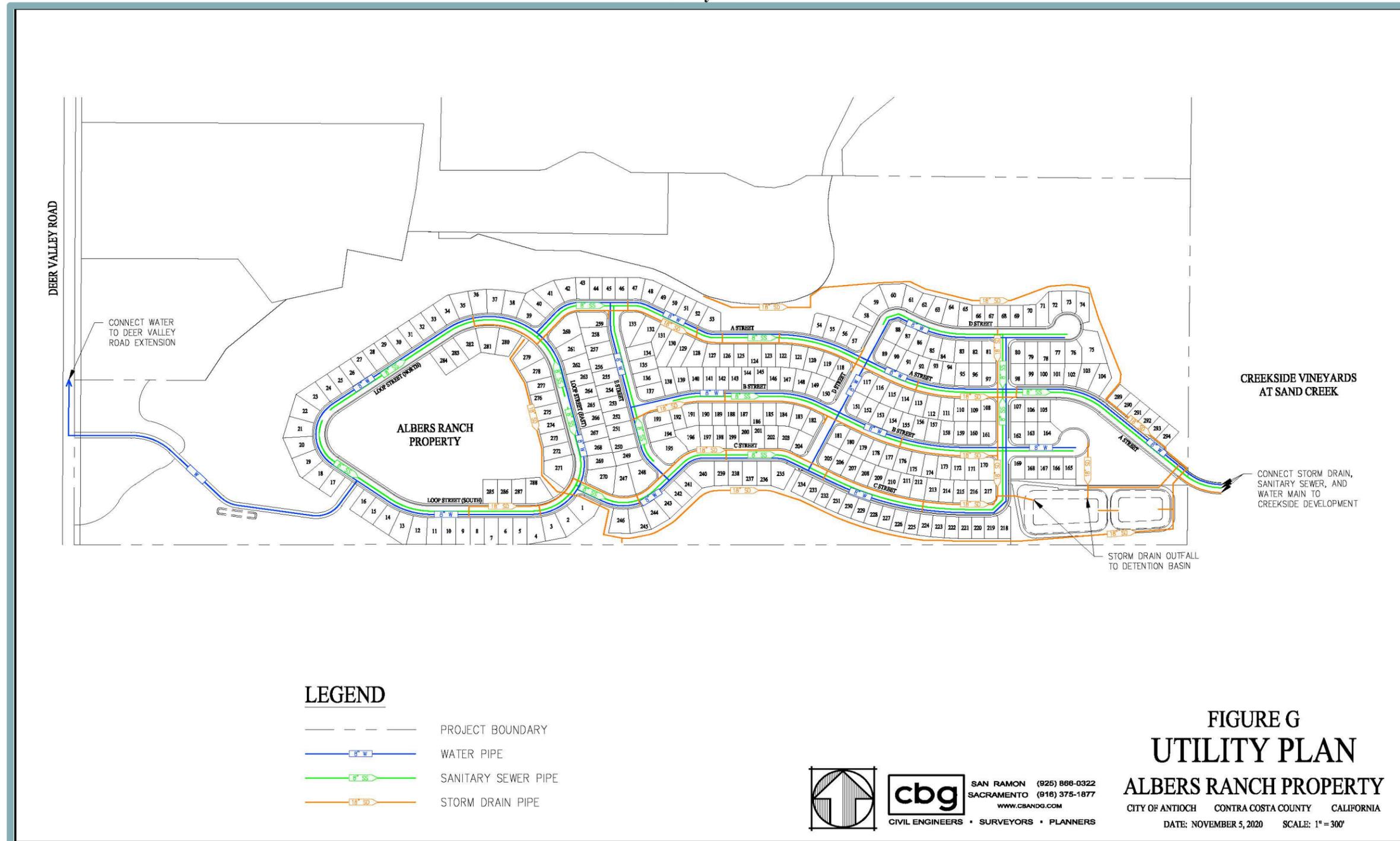
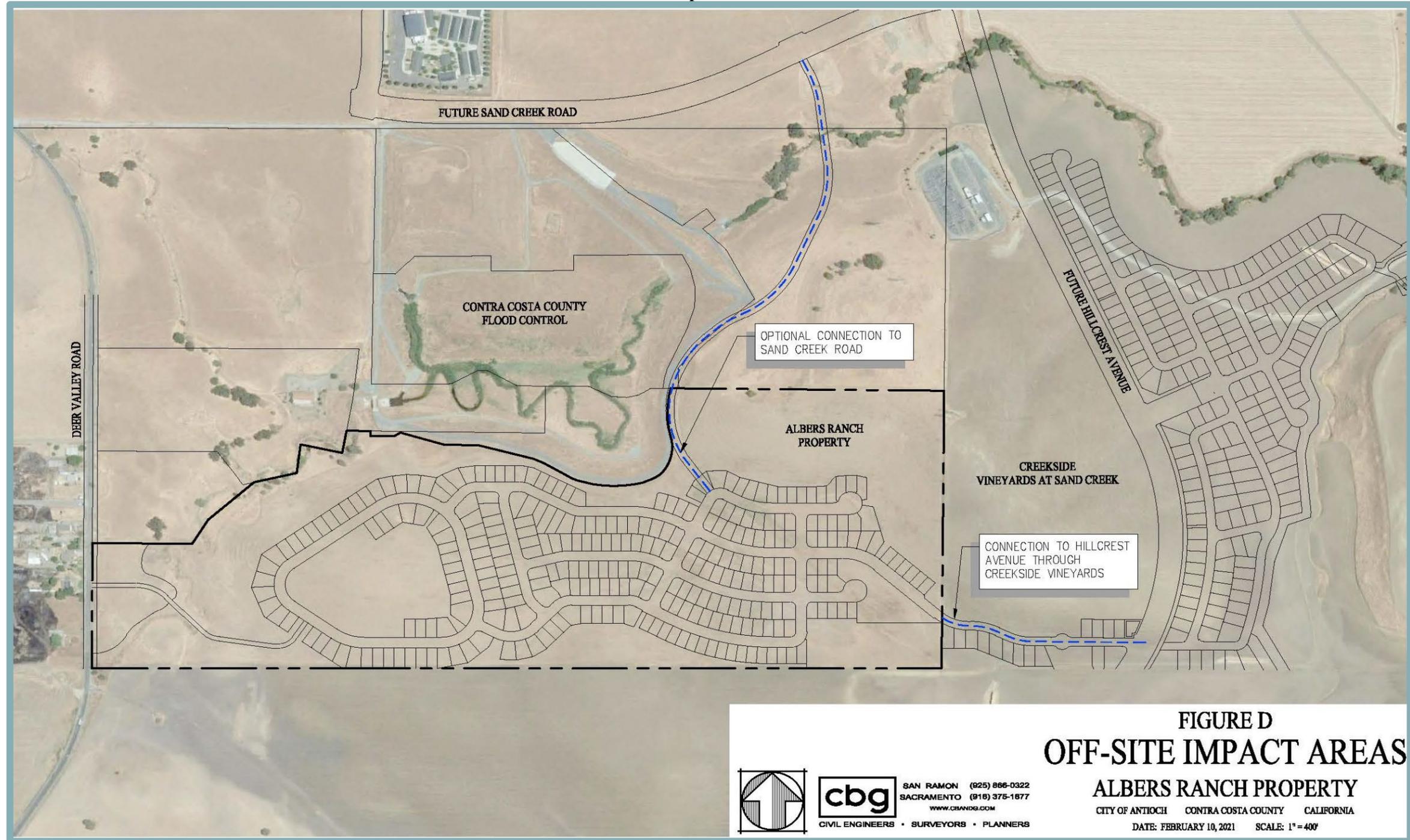


Figure 6
Off-site Improvement Area



Project Construction

All project improvements, including off-site improvements, are anticipated to be built over two phases. While detailed phasing information is not available at this time, each phase would involve development of single-family homes arranged into several neighborhoods.

Project grading would be balanced on-site with import/export minimized to the extent feasible. Final grading is dependent on utility configurations and geotechnical considerations. While portions of the open space areas would not be subject to ground disturbances as part of the project, limited grading would be required at the western knoll within the site, along the southeastern site boundary, and along the perimeter of the lots within the northeastern portion of the site. Overall, a total of 66 acres within the project site would be subject to grading as part of the proposed project. The limits of the proposed grading activity are shown in Figure 7 and Figure 8. As shown in the figures, five-foot-tall (maximum) and 15-foot-tall (maximum) retaining walls would be required along the perimeter of the proposed lots in certain locations to accommodate the sloping topography of the site.

Future Assisted Living and Neighborhood Commercial Development

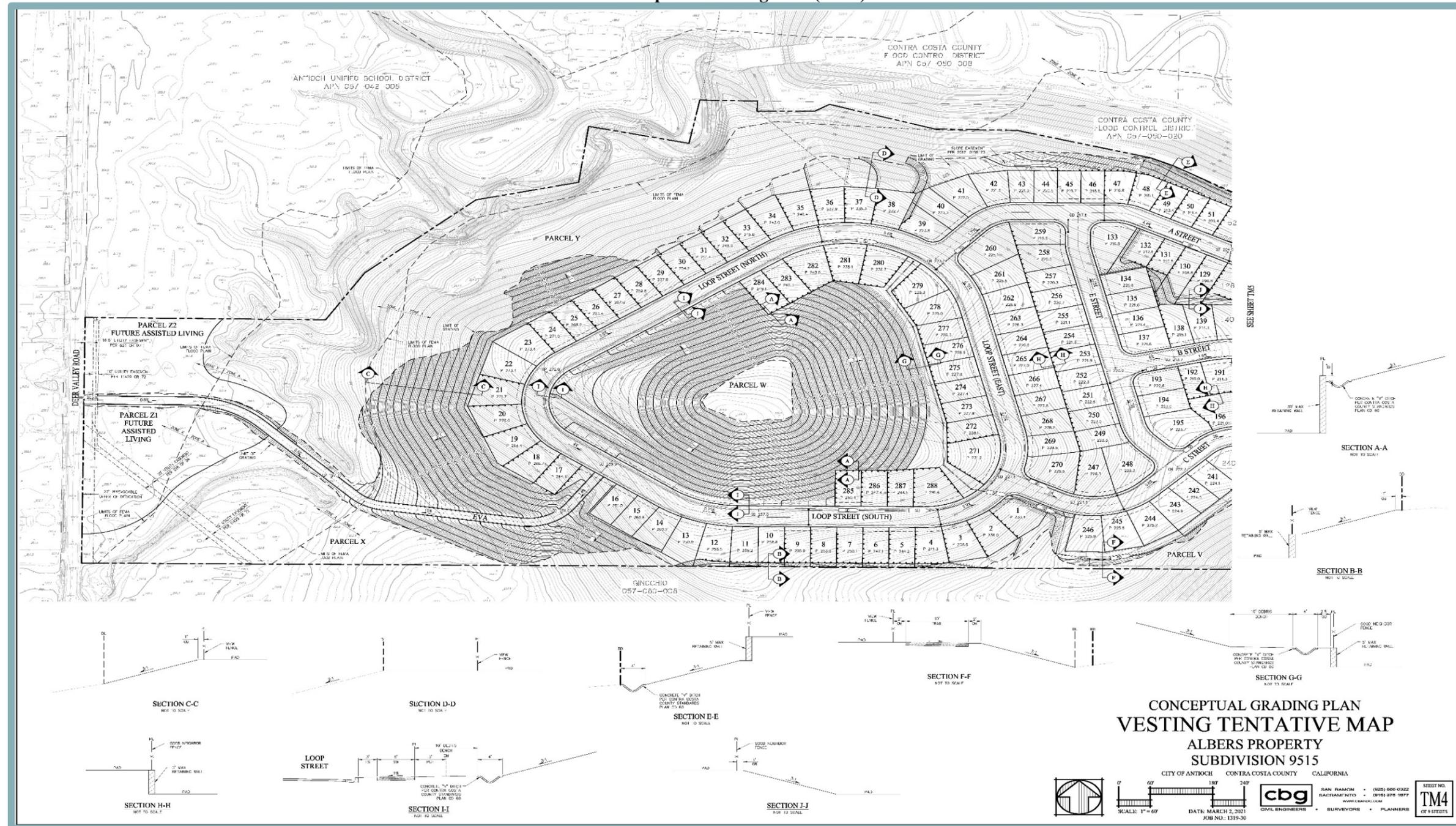
The three acres retained for future assisted living and neighborhood commercial development would consist of two parcels totaling 1.7 and 1.3 acres, respectively, located along Deer Valley Road within the western portion of the project site. Upon issuance of a CUP, the future development is anticipated to include an approximately 150-bed assisted living facility and approximately 40,000 square feet (sf) of neighborhood commercial land uses. While not anticipated for development as part of the proposed project, this EIR includes analysis of the future buildout of the parcels.

PROJECT ENTITLEMENTS AND APPROVALS:

Requested project entitlements are anticipated to include the following:

- General Plan Amendment. The proposed project would require approval of a General Plan text and map amendment to the Sand Creek Focus Area of the General Plan to change the land use designations of the site from Hillside, Estate and Executive Residential/Open Space and Commercial/Open Space to Medium Low Density Residential/Open Space and Commercial/Open Space. A text amendment to the Sand Creek Focus Area of the General Plan would also be required to add the Albers Ranch Sub Area to the Sand Creek Focus Area.
- Master Development Plan/Rezone/Development Agreement. The proposed project would require a rezone from Study District to HPD. HPD would include development standards for the project. The Development Agreement would allow the City and the applicant to enter into an agreement to assure the City that the proposed project would be completed in compliance with the plans submitted by the applicant, and assure the applicant of vested rights to develop the project.
- Vesting Tentative Map Subdivision. The proposed project would require approval of a VTM for the subdivision of the project site into multiple parcels to accommodate 294 single-family residential units, a parcel for a potential future assisted living facility and neighborhood commercial land uses, and recreation, parks, and open space.
- Resource Management Plan. Pursuant to Section 4.4.6.7(t) of the City of Antioch General Plan, the applicant will prepare a Resource Management Plan for City Approval.

**Figure 7
Conceptual Grading Plan (West)**



In addition to approvals from the City of Antioch, the proposed project may require approvals/permits from the following State, federal, or local agencies:

- Bay Area Air Quality Management District (BAAQMD);
- California Department of Fish and Wildlife (CDFW);
- California DSOD;
- Central Valley Regional Water Quality Control Board (CVRWQCB);
- CCCFCD;
- U.S. Army Corps of Engineers (USACE); and
- U.S. Fish and Wildlife Service (USFWS).

PROBABLE ENVIRONMENTAL EFFECTS:

The City has reviewed the proposed project and has prepared an Initial Study (see attached). Based on the analysis within the Initial Study, the City has determined that an EIR should be prepared for the proposed project to address potential project-related impacts to the following environmental resource areas: Air Quality, Greenhouse Gas Emissions, and Transportation. All other CEQA issue areas were determined to be less than significant with implementation of the mitigation measures included in the Initial Study.

Each resource area chapter will include a discussion of the existing setting, thresholds of significance, evaluation of potential impacts, and if necessary, feasible mitigation measures to reduce or eliminate potentially significant impacts. In addition, statutorily required sections and discussion of project alternatives will be included. Some refinement to the aforementioned issues may be required based on comments received during the NOP scoping process. The following section describes each of the technical Chapters of the EIR in further detail.

Air Quality and Greenhouse Gas Emissions

The Air Quality and Greenhouse Gas Emissions chapter of the EIR will summarize the regional air quality setting, including climate and topography, existing ambient air quality, regulatory setting, and presence of any sensitive receptors near the project site. The chapter will address toxic air contaminant (TAC) emissions using the California Air Resource Board (CARB) “Air Quality and Land Use Handbook: A Community Health Perspective.” The project’s cumulative contribution to regional air quality will be discussed, based in part on the modeling conducted at the project level. Air quality emissions will be modeled using project-specific information applied to the California Emissions Estimator Model (CalEEMod) software. The significance of air quality impacts will be determined in comparison to BAAQMD-recommended thresholds of significance. Mitigation measures will be incorporated to reduce any significant air quality impacts, and anticipated reductions in emissions associated with proposed mitigation measures will be quantified.

The Greenhouse Gas Emissions section will also use CalEEMod to produce an estimate of greenhouse gas (GHG) emissions, including indirect emissions of GHGs (e.g., electricity, natural gas). Emissions will be expressed in units of carbon dioxide equivalents. The analysis will include a discussion of Assembly Bill (AB) 32 and Senate Bill (SB) 32, in compliance with the California Climate Change Scoping Plan. Emission estimates will also be compared to the City of Antioch’s Community and Municipal Climate Action Plans and BAAQMD thresholds. With respect to AB 32 and SB 32, the chapter will include a comparison of the estimated emissions to appropriate statewide thresholds. The analysis will discuss the project’s applicable mitigation measures, if needed, for reducing GHG impacts.

Transportation

The Transportation chapter of the EIR will incorporate a Traffic Impact Assessment (TIA) provided to evaluate impacts of the proposed project on existing and future transportation systems. Impact

determination for CEQA purposes will be based on vehicle miles traveled (VMT), consistent with CEQA Guidelines Section 15064.3. The VMT analysis will be quantitative in nature and will be prepared consistent with the City's current guidance regarding analysis of VMT.

While not required for CEQA impact determination purposes, this chapter of the EIR will include a level of service (LOS) analysis to be used solely to determine the project's consistency with the City's General Plan LOS standards. The following intersections will be analyzed in the EIR:

1. Lone Tree Way at Hillcrest Avenue;
2. Lone Tree Way at Heidorn Ranch Road/Fairside Way;
3. Sand Creek Road at Deer Valley Road;
4. Sand Creek Road at Hillcrest Avenue (Future Intersection);
5. Sand Creek Road at Heidorn Ranch Road (Future Intersection);
6. Sand Creek Road at State Route 4 Eastbound Ramps;
7. Sand Creek Road at State Route 4 Westbound Ramps;
8. Hillcrest Avenue at Project Access (Future Intersection);
9. Hillcrest Avenue at Prewett Ranch Road;
10. Deer Valley Road at Prewett Ranch Road; and
11. Deer Valley Road at Lone Tree Way.

The following freeway segments will also be analyzed in the EIR:

12. State Route 4, between Laurel Road and Lone Tree Way;
13. State Route 4, between Lone Tree Way and Sand Creek Road;
14. State Route 4, between Sand Creek Road and Balfour Road; and
15. State Route 4, between Balfour Road and Marsh Creek Road.

The traffic operations will be analyzed under the following scenarios:

- Existing;
- Existing Plus Project;
- Near-Term;
- Near-Term Plus Project;
- Cumulative; and
- Cumulative Plus Project.

The existing setting in regards to pedestrian, bicycle and transit facilities will also be discussed. The EIR chapter will include an analysis of the proposed project's potential impacts related to conflicting with applicable programs, policies, and ordinances addressing the circulation system, vehicle safety hazards, and emergency access. Recommended mitigation measures will be incorporated, if necessary, to reduce significant transportation impacts.

Statutorily Required Sections

Pursuant to CEQA Guidelines Section 21100(B)(5), the Statutorily Required Sections chapter of the EIR will address the potential for growth-inducing impacts of the proposed project, focusing on whether removal of any impediments to growth would occur with the project. A summary of the significant and unavoidable impacts identified within the EIR will be included in this chapter, as well as a discussion of significant irreversible impacts. The chapter will also summarize the cumulative impact analyses, which will be provided in each technical chapter of the EIR.

Alternatives Analysis

In accordance with Section 15126.6(a) of the CEQA Guidelines, the EIR will include an analysis of a range of alternatives, including a No Project Alternative. Consideration will be given to potential off-site locations consistent with CEQA Guidelines, Section 15126.6(f)(2), and such locations will be determined in consultation with City staff. If it is determined that an off-site alternative is not feasible, the EIR will include a discussion describing why such a conclusion was reached. The project alternatives will be selected when more information related to project impacts is available in order for the alternatives to be designed to reduce significant project impacts. The chapter will also include a section of alternatives considered but dismissed, if necessary. The Alternatives Analysis chapter will describe the alternatives and identify the environmentally superior alternative. The alternatives will be analyzed at a level of detail less than that of the proposed project; however, the analyses will include sufficient detail to allow a meaningful comparison of the impacts. Such detail may include conceptual site plans for each alternative, basic quantitative air pollutant and GHG emissions, traffic information (e.g., trip generation), as well as a table that will compare the features and the impacts of each alternative.

October 15, 2021

Forrest Ebbs
Community Development Director, City of Antioch

Date

Attachment

Albers Ranch Initial Study

**CITY OF ANTIOCH
COMMUNITY DEVELOPMENT DEPARTMENT**

**ANTIOCH
CALIFORNIA**

Albers Ranch

INITIAL STUDY

October 2021



1501 Sports Drive, Suite A, • Sacramento • CA • 95834
Office 916.372.6100 • Fax 916.419.610

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- Appendix A: Technical Biological Report
- Appendix B: Preliminary Geotechnical Exploration
- Appendix C: Phase I Environmental Site Assessment
- Appendix D: Preliminary Stormwater Control Plan
- Appendix E: Environmental Noise Assessment

INITIAL STUDY

October 2021

A. BACKGROUND

1. Project Title: Albers Ranch Project
2. Lead Agency Name and Address: City of Antioch
Community Development Department
P.O. Box 5007
Antioch, CA 94531
3. Contact Person and Phone Number: Forrest Ebbs
Community Development Director
(925) 779-7035
4. Project Location: East of Deer Valley Road/Deer Hill Lane intersection
Antioch, CA 94513
5. Project Sponsor's Name and Address: Bryan Wenter
Miller, Star & Regalia
1331 N. California Boulevard
Fifth Floor
Walnut Creek, CA 94528
(925) 925-9400
6. Existing General Plan Designation: Sand Creek Focus Area: "Hillside, Estate and
Executive Residential/Open Space" and
"Commercial/Open Space"
7. Proposed General Plan Designation: Medium Low Density Residential/Open Space and
Commercial/Open Space
8. Existing Zoning Designation: Study District
9. Proposed Zoning Designation: Hillside Planned Development (HPD)
10. Required Approvals from
Other Public Agencies: Bay Area Air Quality Management District
California Department of Fish and Wildlife
California Division of Safety of Dams
Central Valley Regional Water Quality Control Board
Contra Costa County Flood Control District
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service

11. Surrounding Land Uses and Setting:

The 96.5-acre site, located east of the Deer Valley Road/Deer Hill Lane intersection in the City of Antioch, is currently undeveloped, consisting primarily of dry-farmed wheat, regularly disked, with native grassland areas. Sand Creek, a tributary to Marsh Creek, is located along the northern border of the site and a reach of Sand Creek extends through the western portion of the project site. The City of Antioch/Contra Costa County line borders the site to the south. The project site is situated within the Sand Creek Focus Area of the General Plan. Per the City's General Plan, the majority of the site is designated Hillside, Estate and Executive Residential/Open Space, while the western portion of the site, alongside Deer Valley Road, is designated Commercial/Open Space. The site is zoned Study District.

The majority of the surrounding area has been approved for residential development. Within the City of Antioch, the area to the north of the site is approved for development with the Aviano Project, the area to the northeast of the site is approved for development with the Promenade/Vineyard at Sand Creek Project, and the area to the east is approved for development for the Creekside/Vineyards at Sand Creek Project. Surrounding existing uses include rural single-family residential development located west of the site, across Deer Valley Road, and vacant Contra Costa County Flood Control District (CCCFCD) property, Upper Sand Creek Basin, and Antioch School District to the north. The area south of the site is undeveloped, consisting of dry farmland outside the City's Sphere of Influence and Planning Area, within unincorporated Contra Costa County.

12. Project Description Summary:

The Albers Ranch Project (proposed project) would include a multi-generational single-family residential subdivision with 294 units, as well as recreational amenities and associated improvements. The proposed project would also include future development of an assisted living facility and neighborhood commercial development upon issuance of a Conditional Use Permit (CUP). Development of the single-family residential subdivision, assisted living facility, and neighborhood commercial land uses, including proposed roadways, would total approximately 47.4 acres. The remaining 49.1 acres of the site would be retained as open space. The project would require City approval of the following: General Plan Amendment, Master Development Plan/Rezone, Development Agreement, and Vesting Tentative Subdivision Map (VTM).

13. Status of Native American Consultation Pursuant to Public Resources Code Section 21080.3.1:

In compliance with Assembly Bill (AB) 52 (Public Resources Code [PRC] Section 21080.3.1), a project notification letter was distributed to the Amah Mutsun Tribal Band of Mission San Juan Bautista, Chicken Ranch Rancheria of Me-Wuk Indians, Indian Canyon Mutsun Band of Costanoan, Muwekman Ohlone Indian Tribe of the SF Bay Area, Nashville Enterprise Miwok-Maide-Nishinam Tribe, North Valley Yokuts Tribe, the Ohlone Indian Tribe, Tule River Indian Tribe, Wilton Rancheria, and the Confederated Villages of Lisjan. The letters were distributed on May 19, 2021 and requests to consult were not received within the required response period.

B. SOURCES

The following documents are referenced information sources used for the purposes of this Initial Study:

1. California Air Resources Board. *The 2017 Climate Change Scoping Plan Update*. January 20, 2017.
2. California Department of Conservation. *California Important Farmland Finder*. Available at: <https://maps.conservation.ca.gov/DLRP/CIFF/>. Accessed June 2021.
3. California Department of Forestry and Fire Protection. *Contra Costa County, Very High Fire Hazard Severity Zones in LRA*. January 7, 2009.
4. California Department of Transportation. *California Scenic Highway Mapping System*. Available at: <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>. Accessed July 2021.
5. California Energy Commission. *2019 Building Energy Efficiency Standards*. March 2018.
6. CalRecycle. *SWIS Facility/Site Activity Details Keller Canyon Landfill (O7-AA-0032)*. Available at: <https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4407?siteID=228>. Accessed June 2021.
7. City of Antioch. *2015 Urban Water Management Plan*. May 2016.
8. City of Antioch. *About APD*. Available at: <http://www.antiochca.gov/police/about-apd/>. Accessed June 2021.
9. City of Antioch. *City of Antioch General Plan*. November 23, 2003.
10. City of Antioch. *City of Antioch Housing Element 2015-2023*. Adopted April 14, 2015.
11. City of Antioch. *Citywide Design Guidelines Manual*. October 2009.
12. City of Antioch. *Draft General Plan Update Environmental Impact Report*. July 2003.
13. Contra Costa Clean Water Program. *Stormwater C.3. Guidebook, Stormwater Quality Requirements for Development Applications*. May 17, 2017.
14. Contra Costa County Department of Conservation and Development. *2016 Agricultural Preserves Map*. February 1, 2017.
15. Department of Toxic Substances Control. *EnviroStor*. Available at: <https://dtsc.ca.gov/your-envirostor/>. Accessed June 2021.
16. ENGEO Incorporated. *Phase One Environmental Site Assessment Sullenger Ranch Antioch, California*. June 29, 2005.
17. ENGEO Incorporated. *Preliminary Geotechnical Exploration Sullenger Ranch, Antioch, Ca*. June 29, 2005.
18. Live Oak Associates, Inc. *Albers Project Site, Technical Biological Report, Antioch, California*. August 9, 2021.
19. Natural Investigations Company. *Cultural and Paleontological Resources Inventory for the Albers Ranch Project, City of Antioch, Contra Costa County California*. May 25, 2021.
20. San Francisco Bay Regional Water Quality Control Board. *Order No. R2-2019-0035, NPDES No. CA0038547*. Adopted December 11, 2019.
21. Saxelby Acoustics LLC. *Environmental Noise Assessment Albers Ranch Project*. June 22, 2021.

C. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is “Potentially Significant Impact” as indicated by the checklist on the following pages.

- | | | |
|---|--|--|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forest Resources | <input checked="" type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input type="checkbox"/> Energy |
| <input checked="" type="checkbox"/> Geology and Soils | <input checked="" type="checkbox"/> Greenhouse Gas Emissions | <input checked="" type="checkbox"/> Hazards and Hazardous Materials |
| <input checked="" type="checkbox"/> Hydrology and Water Quality | <input type="checkbox"/> Land Use and Planning | <input type="checkbox"/> Mineral Resources |
| <input checked="" type="checkbox"/> Noise | <input type="checkbox"/> Population and Housing | <input type="checkbox"/> Public Services |
| <input type="checkbox"/> Recreation | <input checked="" type="checkbox"/> Transportation | <input checked="" type="checkbox"/> Tribal Cultural Resources |
| <input type="checkbox"/> Utilities and Service Systems | <input type="checkbox"/> Wildfire | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

D. DETERMINATION

On the basis of this initial study:

- I find that the Proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the applicant. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the Proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Forrest Ebbs, Community Development Director

Printed Name

Date

City of Antioch

For

E. BACKGROUND AND INTRODUCTION

This Initial Study identifies and analyzes the potential environmental impacts of the Albers Ranch Project (proposed project). The information and analysis presented in this document is organized in accordance with the order of the California Environmental Quality Act (CEQA) checklist in Appendix G of the CEQA Guidelines. Where the analysis provided in this document identifies potentially significant environmental effects of the project, mitigation measures are prescribed.

The mitigation measures prescribed for environmental effects described in this Initial Study would be implemented in conjunction with the project, as required by CEQA. The mitigation measures would be incorporated into the project through project conditions of approval. The City would adopt findings and a Mitigation Monitoring/Reporting Program for the project in conjunction with approval of the project.

In 2003, the City of Antioch completed a comprehensive update of the City's General Plan and adopted an Environmental Impact Report (EIR) for the updated General Plan. The General Plan EIR is a program EIR, prepared pursuant to Section 15168 of the CEQA Guidelines (Title 14, California Code of Regulations [CCR] Sections 15000 *et seq.*). The General Plan EIR analyzed full implementation of the General Plan and identified measures to mitigate the significant adverse impacts associated with the General Plan. Consistent with Section 15150 of the CEQA Guidelines, applicable portions of the General Plan and General Plan EIR are incorporated by reference as part of this Initial Study.

The City certified an EIR for the Aviano Project, located to the north of the project site, in 2008 and for the Creekside/Vineyards at Sand Creek Project, located immediately east of the project site, in 2020. The Aviano Project will include an adult residential development that comprises up to 535 adult single-family units and associated improvements, including a recreational facility, parks and landscaped areas, on approximately 93 acres. The Aviano Project also includes a 60-foot wide 1.5-acre easement crossing Sand Creek to allow for a future access road to development south of the Aviano project site. The Creekside/Vineyards at Sand Creek Project will include the construction of 220 single-family residential units and associated improvements on approximately 59.9 acres of the 158.2-acre project site, as well as 1.8 acres of off-site improvements. As part of the Creekside/Vineyards at Sand Creek Project, Hillcrest Avenue would be extended through the Creekside/Vineyards at Sand Creek project site. The proposed project is independent of the Creekside/Vineyards at Sand Creek Project, but would connect to planned infrastructure improvements to be constructed as part of that project. Similarly, the proposed project includes a potential access roadway option that would involve connection to a planned access road of the Aviano Project, should the Creekside/Vineyards at Sand Creek project access not be completed. Thus, the analysis within this Initial Study incorporates the certified EIRs for the aforementioned previously approved projects by reference as necessary.

F. PROJECT DESCRIPTION

The following provides a description of the project site's current location and setting, as well as the proposed project components and the discretionary actions required for the project.

Project Location and Setting

The project site consists of approximately 96.5 acres located east of the Deer Valley Road/Deer Hill Lane intersection in the City of Antioch, Contra Costa County, California.

The City of Antioch is within eastern Contra Costa County and is bordered to the north by the San Joaquin River Delta; to the east by the City of Brentwood and the City of Oakley; to the west by

the City of Pittsburg and unincorporated portions of Contra Costa County; and to the south by unincorporated portions of Contra Costa County (see Figure 1). The site is identified by Assessor's Parcel Numbers (APNs) 057-042-006 and 057-050-021.

The project site is bordered by the City of Antioch/Contra Costa County line to the south. The City of Antioch/City of Brentwood limit is further east of the site (see Figure 2). Sand Creek is located along the northern border of the site, and State Route (SR) 4 is located approximately 1.44 miles east of the site. The project site is situated within the Sand Creek Focus Area of the General Plan, which contains lands designated by the Antioch General Plan for open space, residential, commercial, and mixed-use development. Per the City's General Plan, the majority of the site is designated Hillside, Estate and Executive Residential/Open Space, while the western portion of the site, alongside Deer Valley Road, is designated Commercial/Open Space. The site is zoned Study District.

The project site is generally rectangular, with the southern, western, and eastern boundaries linear, and the northern property line meandering in and out as it follows Sand Creek towards the respective property corners as show in Figure 2. Currently, the project site is undeveloped, consisting primarily of dry-farmed wheat, regularly disked, with native grassland areas and non-native vegetation. A reach of Sand Creek extends through the western portion of the project site, with an existing culvert under an unimproved private access road.

The topography of the site is defined by two large knolls within the western and northeastern portions of the site. Elevations on the project site range from approximately 324 feet above mean sea level (msl) at the top of the western knoll, to 175 feet at the southeastern corner of the site. It should be noted that currently, 16.5-foot-wide and 10-foot-wide utility easements are located parallel to each other along the site's western boundary. In addition, a second pair of utility easements extends from Deer Valley Road diagonally toward the southern site boundary.

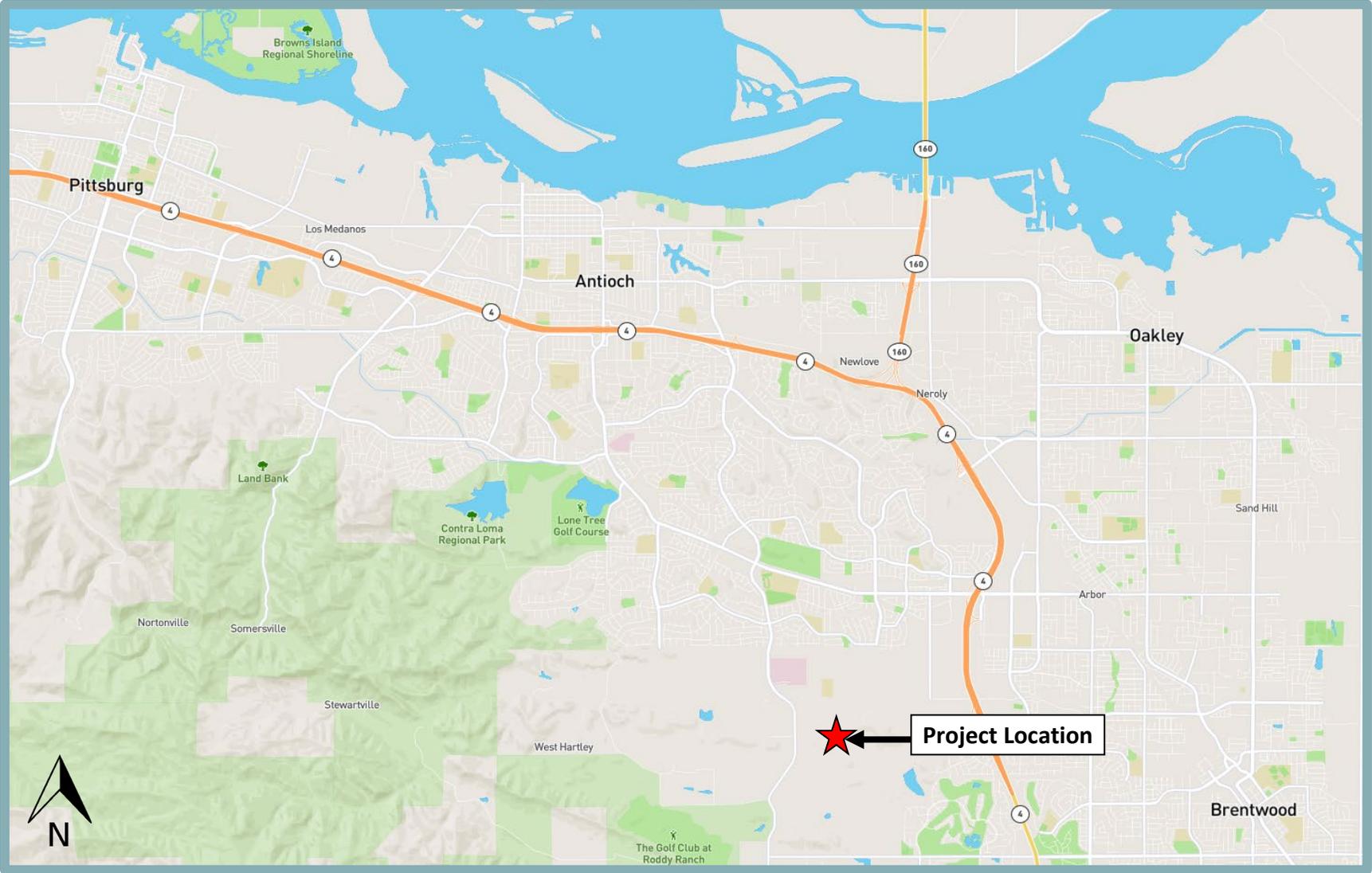
Surrounding Land Uses

As shown in Figure 2, the majority of the surrounding area has been approved for residential development. Within the City of Antioch, the area to the north of the site is approved for development with the Aviano Project, the area to the northeast of the site is approved for development with the Promenade/Vineyard at Sand Creek Project, and the area to the east is approved for development for the Creekside/Vineyards at Sand Creek Project. Surrounding existing uses include single-family residential development located west of the site, across Deer Valley Road, and CCCFCD infrastructure, Upper Sand Creek Basin (Basin), and Antioch School District to the north. The CCCFCD's Basin is owned in fee title by the CCCFCD and includes additional CCCFCD rights-of-way in the form of easements along the Basin's south and east side. An existing Pacific Gas and Electric Company (PG&E)-owned parcel with an electrical substation, designated Public/Quasi Public per the General Plan, is located northeast of the site. The area south of the site is undeveloped, consisting of dry farmland outside the City's Sphere of Influence and Planning Area, within unincorporated Contra Costa County.

Project Components

The proposed project would include development of a single-family residential subdivision with 294 units, as well as recreational amenities and associated improvements (see Figure 3). The proposed project would also include future development of an assisted living facility and neighborhood commercial development upon issuance of a CUP.

Figure 1
Regional Project Location



**Figure 2
Project Location**

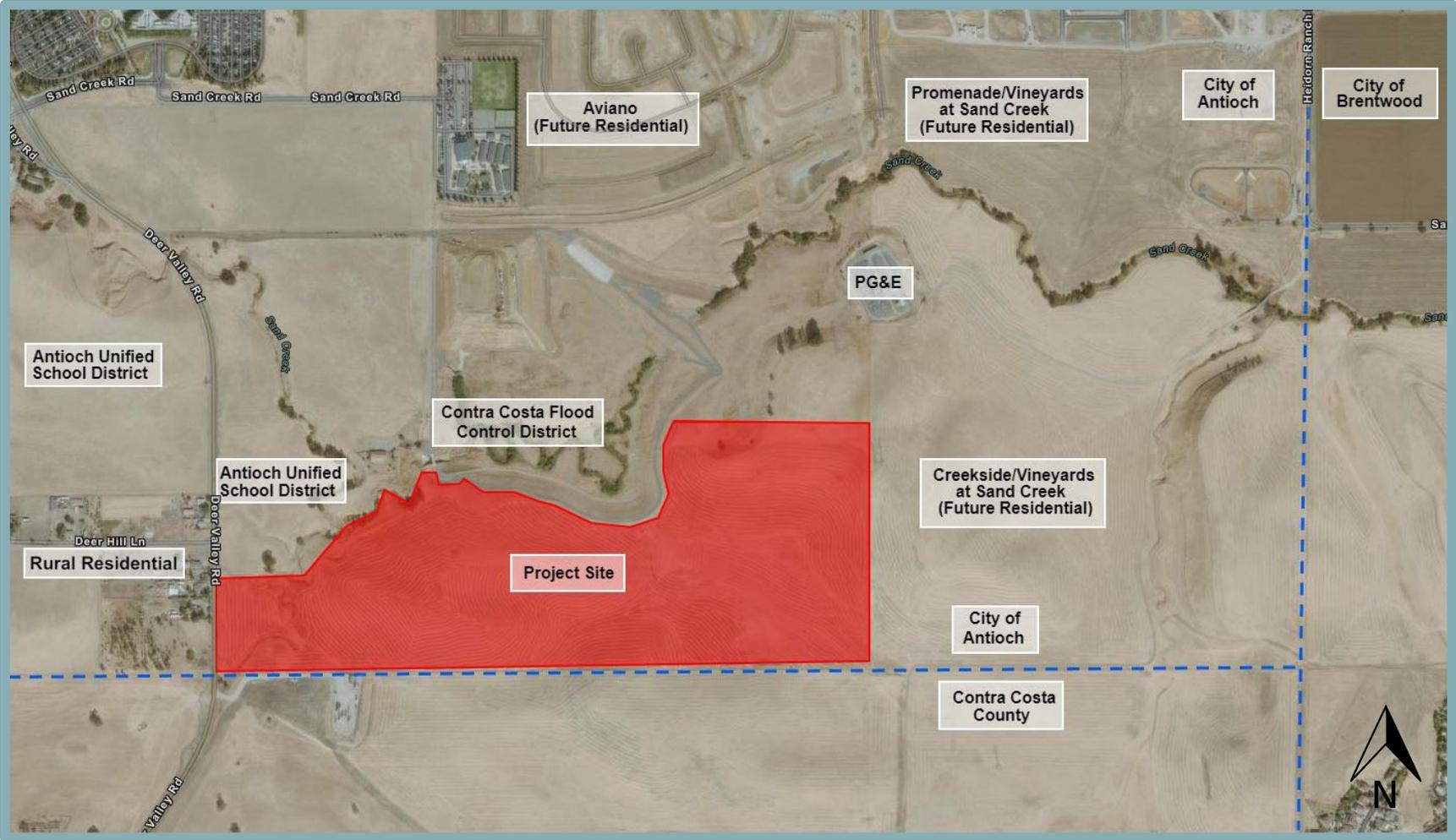
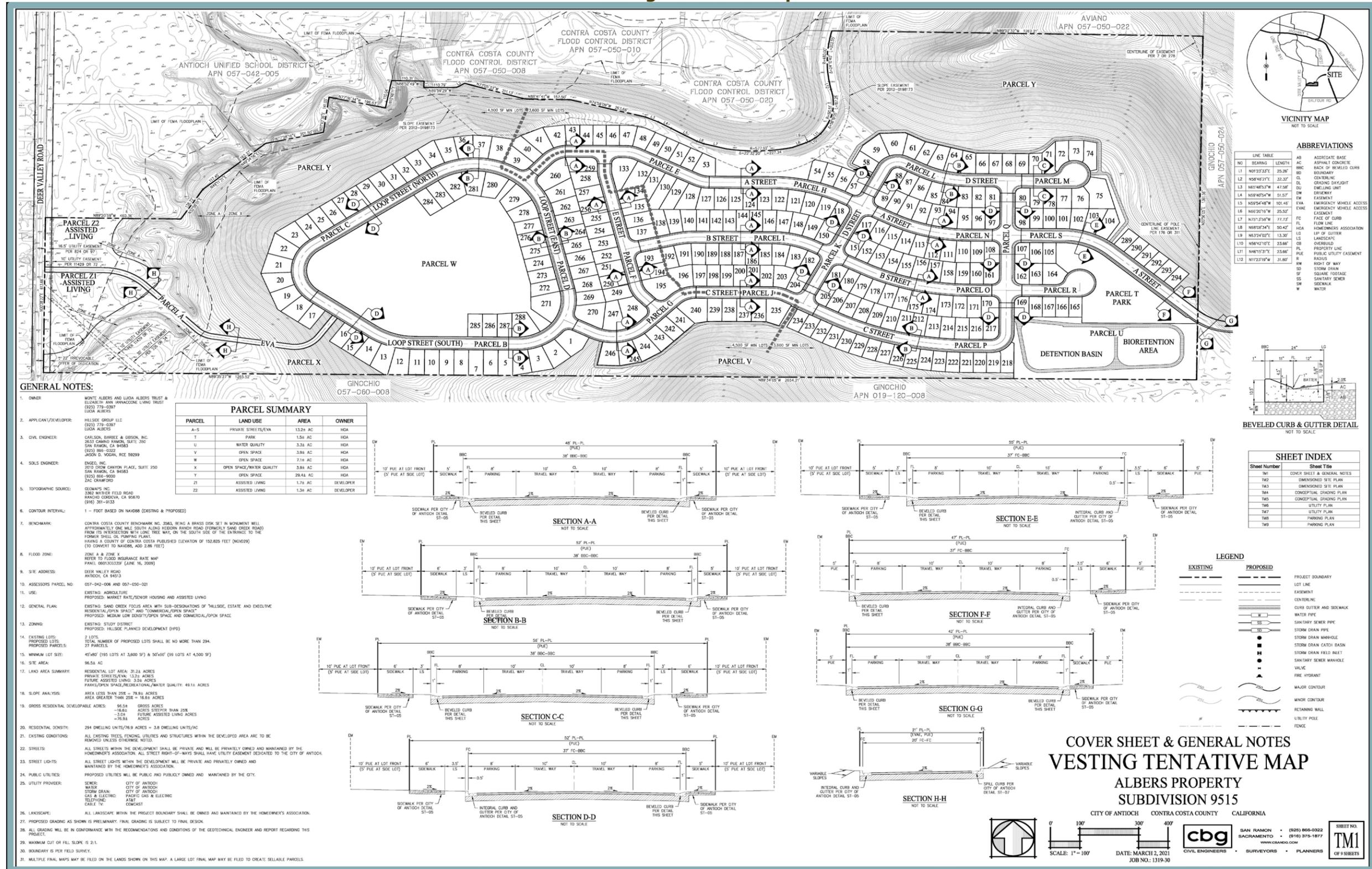


Figure 3
Vesting Tentative Map



Development of the single-family residential subdivision, assisted living facility, and neighborhood commercial land uses, including proposed roadways, would total approximately 47.4 acres. The remaining 49.1 acres of the site would be retained as open space.

The project would require City approval of the following: General Plan Amendment, Master Development Plan/Rezone, and Vesting Tentative Subdivision Map. A Development Agreement is also requested by the applicant. The details of the proposed project, including required approvals, are described in further detail below.

General Plan Amendment

The proposed project would include a General Plan Amendment to the land use map for the Sand Creek Focus Area of the General Plan to change the portion of the site currently designated Hillside, Estate and Executive Residential/Open Space to Medium Low Density Residential/Open Space. The western portion of the site; designated Commercial/Open Space, will retain the existing designations. The proposed project would also include a General Plan Amendment to the text of the Sand Creek Focus Area of the General Plan in order to add a sub area to the Sand Creek Focus Area called the Albers Ranch Sub Area.

Master Development Plan/Rezone/Development Agreement

The proposed project would require approval of a rezone to change the zoning designation of the site from Study District to HPD, subject to a Master Development Plan. The Master Development Plan and HPD district would list the development standards applicable to the project site, including setbacks, lot sizes, and building heights for the single-family residential subdivision. The future assisted living facility and neighborhood commercial land uses would be required to comply with the Zoning Ordinance. In addition, the applicant is requesting City approval of a Development Agreement, which would assure the City that the proposed project would proceed to its completion in compliance with the plans submitted by the applicant, and assure the applicant of vested rights to develop the project.

Vesting Tentative Subdivision Map

The proposed project would include a Vesting Tentative Subdivision Map (see Figure 3) to subdivide the project site into 294 single-family lots. Of the 96.5-acre site, only 79.9 acres are considered developable due to site constraints (e.g., slopes greater than 25 percent), three acres of which are proposed for future development of an assisted living facility and neighborhood commercial land uses. Approximately 31.2 acres are proposed for development of single-family residential lots, 13.2 acres would be developed with private streets, and 49.1 acres would be used for parks, open space, recreation, and water quality/detention purposes. Table 1 provides a summary of the proposed land uses.

Table 1 Proposed Land Uses		
Proposed Land Use	Parcels	Acreage
Single-Family Residential	-	31.2
Private Streets/EVA	A-S	13.2
Parks/Open Space/Recreational/Water Quality	T, V, W, X, Y, U	49.1
Future Assisted Living Facility and Neighborhood Commercial	Z1, Z2	3.0
Total	--	96.5

The areas to remain open space would include the hillside within the northeastern portion of the site, the hillside along the center of the southern site boundary, the upper reaches of the existing knoll within the western portion of the site, and a setback between the future development parcels and the proposed homes.

Single-Family Residential

The proposed single-family residential uses would represent a continuation of other planned development in the project vicinity. The average density of the proposed residential development would be approximately 3.8 dwelling units per acre (294 units/76.9 acres of developable land). Six different models, each with three different elevations, would be constructed. Residential lot sizes would generally transition from larger sizes within the eastern portion of the site, closer to the Creekside/Vineyards at Sand Creek Project, to slightly smaller sizes within the western portion of the site ranging from a minimum of 3,600 square feet (sf) to a maximum of 9,000 sf.

Access and Circulation

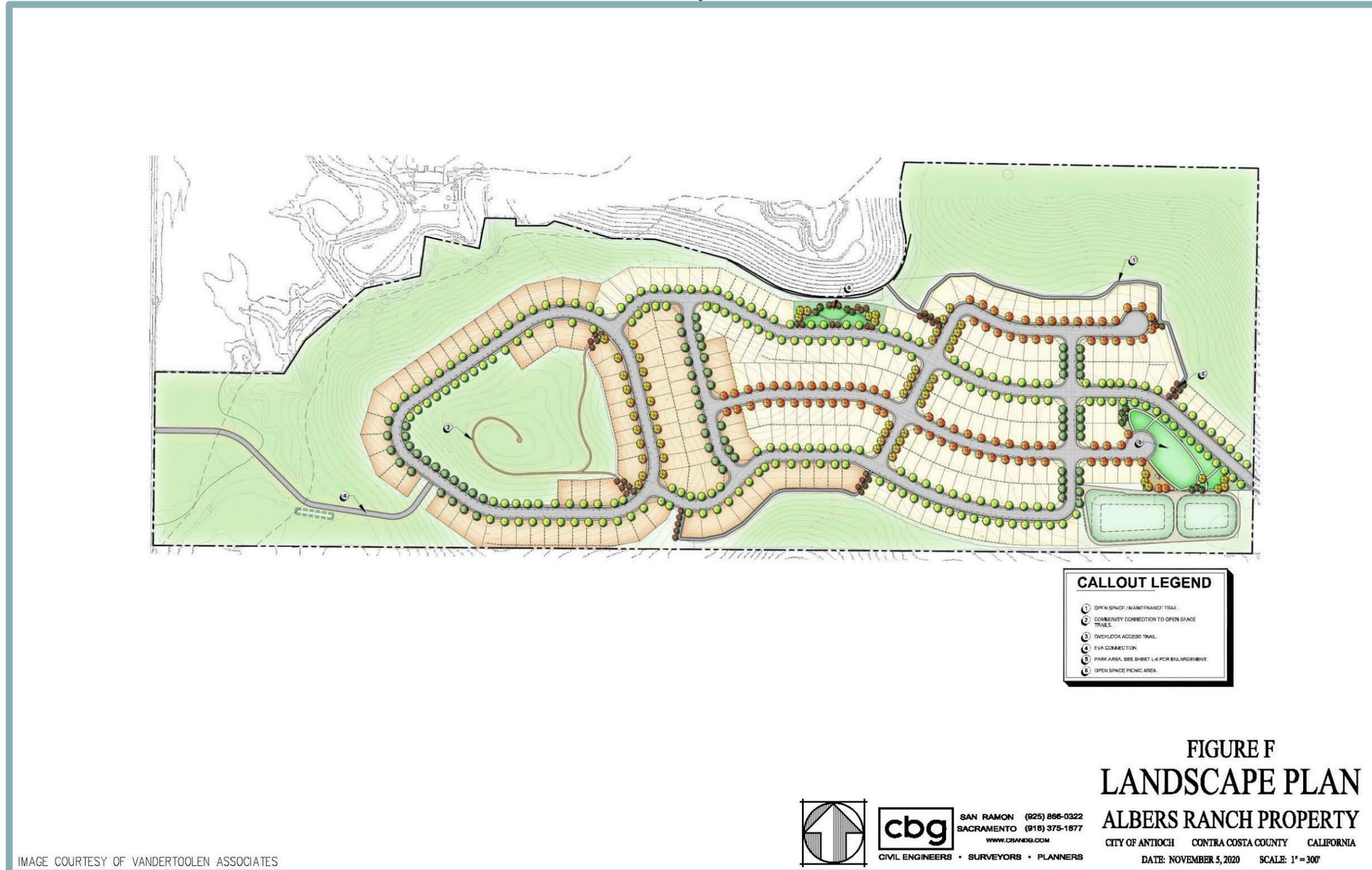
The area to the east of the site is planned for future development with the Creekside/Vineyards at Sand Creek Project, which would include extension of a new roadway, Hillcrest Avenue, to the eastern site boundary. Primary access to the proposed project would be provided by a new on-site roadway connecting to the planned Hillcrest Avenue extension east of the site. The connection to Hillcrest Avenue is contingent upon construction of the Creekside/Vineyards at Sand Creek Project. In the event that the Creekside/Vineyards at Sand Creek Project is not constructed, access to the proposed project may be provided by an alternate roadway connecting the northern portion of the project site to the future Sand Creek Road included as an Irrevocable Offer of Dedication (IOD) as part of the Aviano Project. If the developer desires the optional roadway for development, the developer would need to acquire a portion of the right-of-way from the CCCFCD in order to construct the optional road. The sale of right-of-way is at the CCCFCD discretion. An emergency vehicle access (EVA) only roadway would provide secondary access from Deer Valley Road to the western portion of the project site. The EVA would follow the existing alignment of the unimproved private access road over a culvert. Within the project site, all proposed internal streets would be private and would be consistent with applicable City of Antioch design standards. Parking would be allowed on both sides of the internal roadways, providing for a total of 362 spaces. In addition, two covered garage parking spaces would be provided within each residential unit, providing a total of 588 spaces.

Parks, Trails, Open Space, and Landscaping

As part of the proposed project, a total of 41.9 acres would be reserved for private parks and recreational facilities and retained as open space (see Figure 4).

Parcel T, located in the southeastern portion of the project site, would include a 1.5-acre park to provide recreational amenities for the project site. Parcel X, located south of the EVA, would be retained as open space, with a portion of the parcel to be used for water quality/bioretenion purposes. Parcels V, W, and Y would be preserved as open space and would include trails accessible to future residents. Parcel V would be located on the southern border of the project site and would include an open space/maintenance trail. Parcel W is located on the western knoll of the project site surrounded by proposed residential lots and would include an overlook access trail. Parcel Y would be located along the northern portion of the project site and would also include an open space/maintenance trail.

Figure 4
Landscape Plan



The proposed project would include community trails between lots throughout the project site to provide access to the designated open space/trails in Parcels V, W, and Y. Two community trails, located north of Parcel V, would provide residential access to the designated open space/maintenance trail in Parcel V. Additionally, two community trails, east of Parcel W, would provide residential access to the overlook access trail in Parcel W.

Three community trails, located in the northeast portion of the project site, would provide residential access to the designated open space/maintenance trail in Parcel Y. The designated open space/maintenance trail in Parcel Y would provide community access to Sand Creek. The proposed project would also include an open space picnic area between lots 53 and 54 south of Sand Creek.

Landscaping features would be provided throughout the proposed development area and would conform to the requirements and provisions of Section 9-5.1001 of the City of Antioch Municipal Code. Individual residences would also be landscaped with trees, shrubs, groundcover and some lawns, and would be maintained by the individual owners. Public spaces, open spaces, and private landscaping areas would have an emphasis on drought-tolerant and adaptive plant species.

Utilities

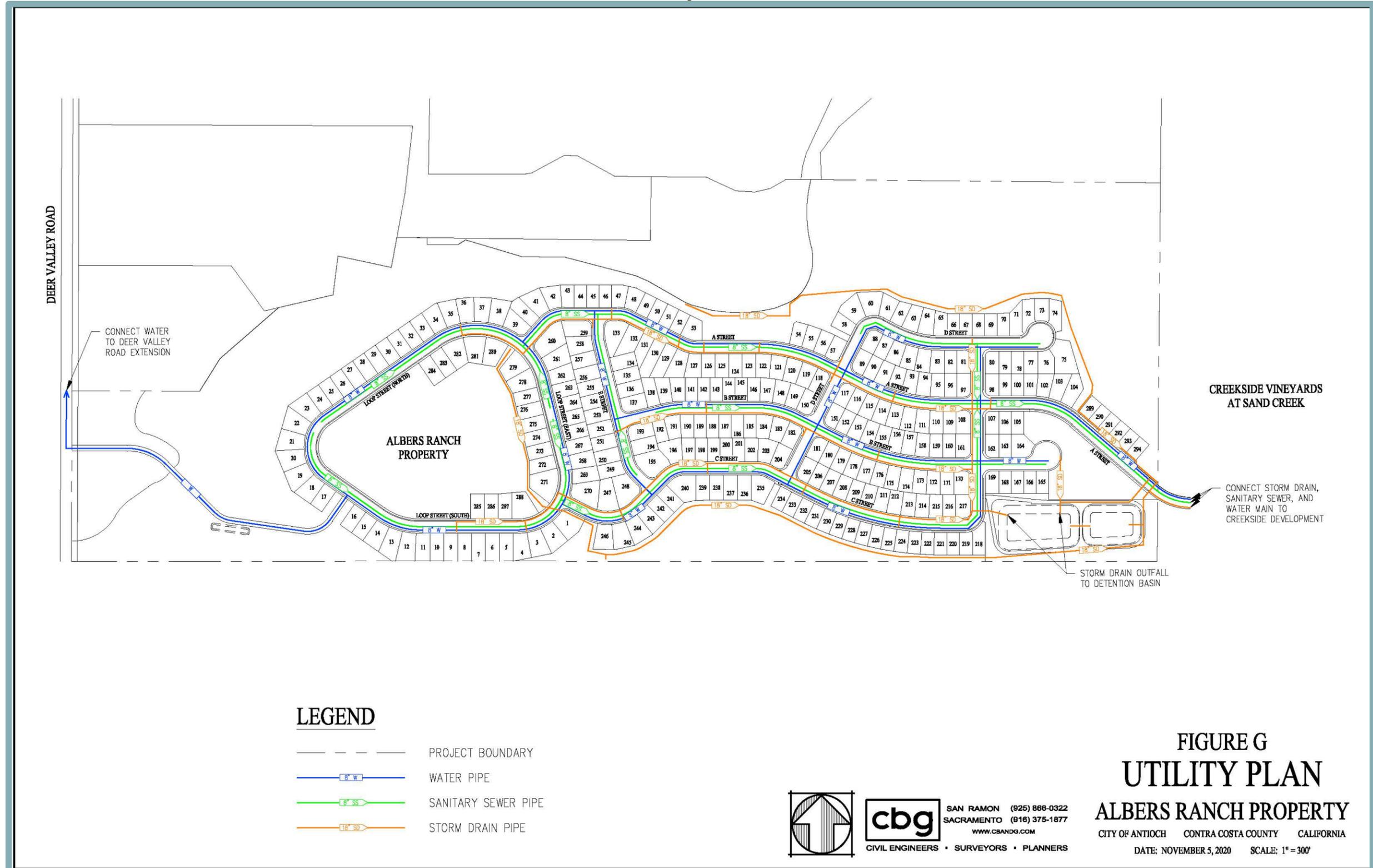
Figure 5 illustrates the proposed water, sewer, and stormwater utility improvements associated with the project.

Water supply for the proposed development would be provided by the City. Potable water would be distributed to the project site by an existing 12-inch Zone III trunk line in the future Hillcrest Avenue. The water line would continue south to I Street planned by the Creekside/Vineyards at Sand Creek Project, then head west to the proposed project boundary. The internal private streets within the proposed project would include water lines that would connect to the water line from the Creekside/Vineyards at Sand Creek Project. In addition, a water line would be undergrounded below the proposed EVA road in the western portion of the site, and follow Deer Valley Road north to connect to the City's existing water system (see Figure 5).

Wastewater conveyance for the proposed development would be provided by the City. The proposed project would include construction of sanitary sewer lines beneath the proposed private streets that would connect to I Street in the Creekside/Vineyards at Sand Creek Project. The Creekside/Vineyards at Sand Creek Project includes a main sewer line that would eventually connect to a planned sewer line in Sand Creek Road.

The project site naturally drains to the east. The proposed project would include construction of a series of drain inlets and underground storm drain pipes to capture stormwater runoff from impervious surfaces created by the project. Runoff would be routed to a detention basin and bio-retention basin located within the southeastern portion of the project site (Parcel U). The basin would provide for treatment and detention of captured stormwater runoff. The stormwater flows would be metered from the basin to match pre-development rates. A discharge line would be constructed into I Street of the Creekside/Vineyards at Sand Creek Project. The proposed EVA road in the western portion of the site would generate a relatively small amount of runoff. The runoff from the EVA road would be collected into a proposed bio-swale within Parcel X and eventually discharge through a new outfall into the unnamed reach of Sand Creek. Detention of the runoff from the EVA would not be necessary as Sand Creek drains into the Basin.

**Figure 5
Utility Plan**



Electricity for the proposed project would be provided by PG&E. Telecommunication services would be provided by AT&T. Comcast and Astound would provide cable television and internet services to the project site. Dry utilities, electrical, gas, and technology lines would be extended from Sand Creek Road beneath future Hillcrest Avenue to the project site.

The proposed project would not conflict with the existing utility easements located along the site's western boundary or southwestern portion of the site.

Off-Site Improvements

As noted above, should the Creekside/Vineyards at Sand Creek Project not be developed, an alternative roadway to the north may be constructed as part of the proposed project. Figure 6 below illustrates the proposed alternative roadway connection configuration. As shown in the figure, the alternative roadway would connect the northern portion of the site to the future Sand Creek Road, following the eastern boundary of the CCCFCD property and Basin and crossing Sand Creek. Any roadway and associated grading of the alternate roadway near the Basin's main dam and/or saddle dike would require discretionary approval from the California Division of Safety of Damns (DSOD). In addition, the project applicant would be required to obtain a CCCFCD encroachment permit for any work planned within the CCCFCD right-of-way. The optional roadway was included as part of the Aviano Project and has been analyzed within the associated EIR.

Project Construction

All project improvements, including off-site improvements, are anticipated to be built over two phases. While detailed phasing information is not available at this time, each phase would involve development of single-family homes arranged into several neighborhoods.

Project grading would be balanced on-site with import/export minimized to the extent feasible. Final grading is dependent on utility configurations and geotechnical considerations. While portions of the open space areas would not be subject to ground disturbances as part of the project, limited grading would be required at the western knoll within the site, along the southeastern site boundary, and along the perimeter of the lots within the northeastern portion of the site. Overall, a total of 66 acres within the project site would be subject to grading as part of the proposed project. The limits of the proposed grading activity are shown in Figure 7 and Figure 8. As shown in the figures, five-foot-tall (maximum) and 15-foot-tall (maximum) retaining walls would be required along the perimeter of the proposed lots in certain locations to accommodate the sloping topography of the site.

Future Assisted Living and Neighborhood Commercial Development

The three acres retained for future assisted living and neighborhood commercial development would consist of two parcels totaling 1.7 and 1.3 acres, respectively, located along Deer Valley Road within the western portion of the project site. Upon issuance of a CUP, the future development is anticipated to include an approximately 150-bed assisted living facility and approximately 40,000 sf of neighborhood commercial land uses. While not anticipated for development as part of the proposed project, this EIR includes analysis of the future buildout of the parcels.

Figure 6
Off-Site Improvement Area

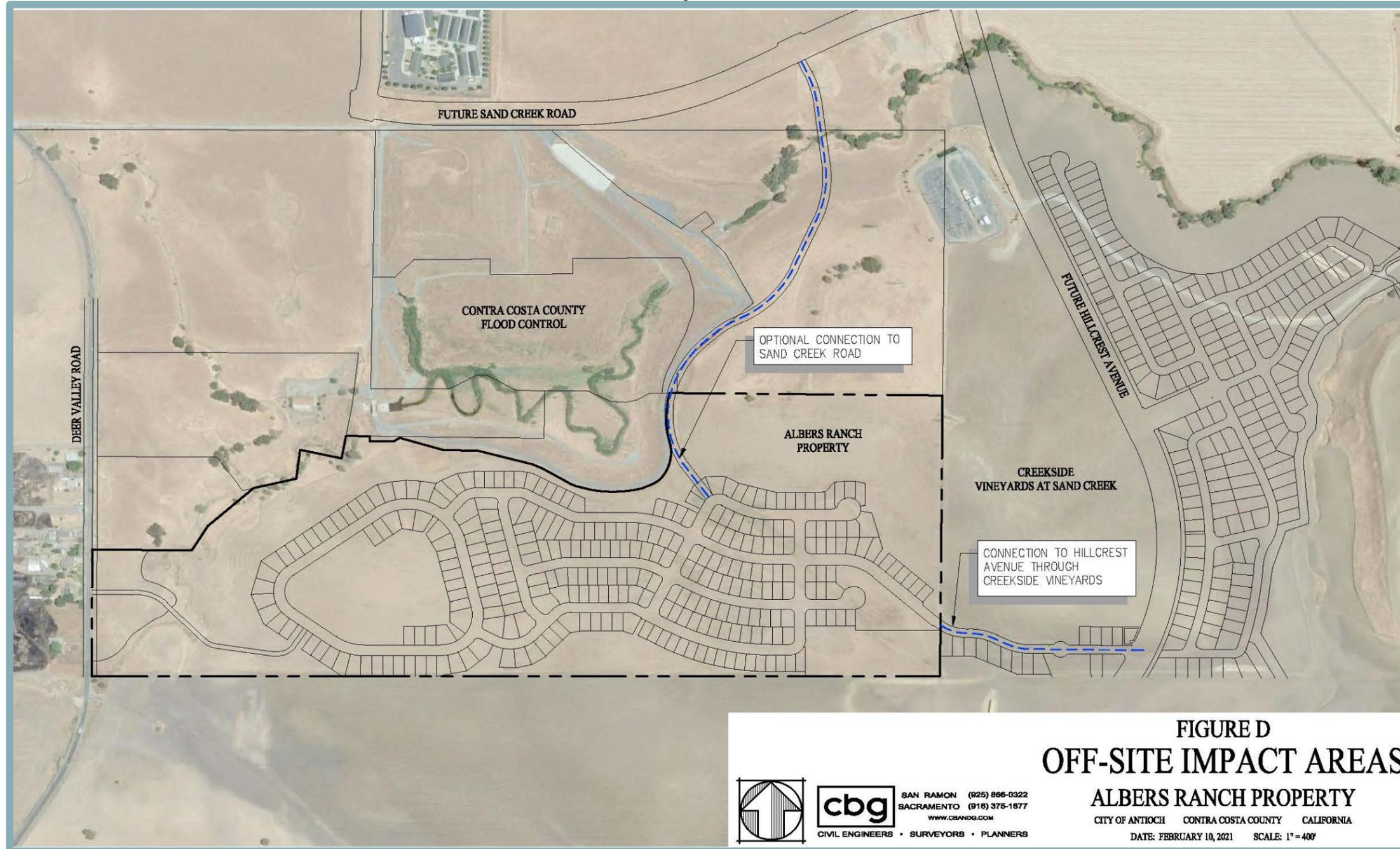


Figure 7
Conceptual Grading Plan (West)

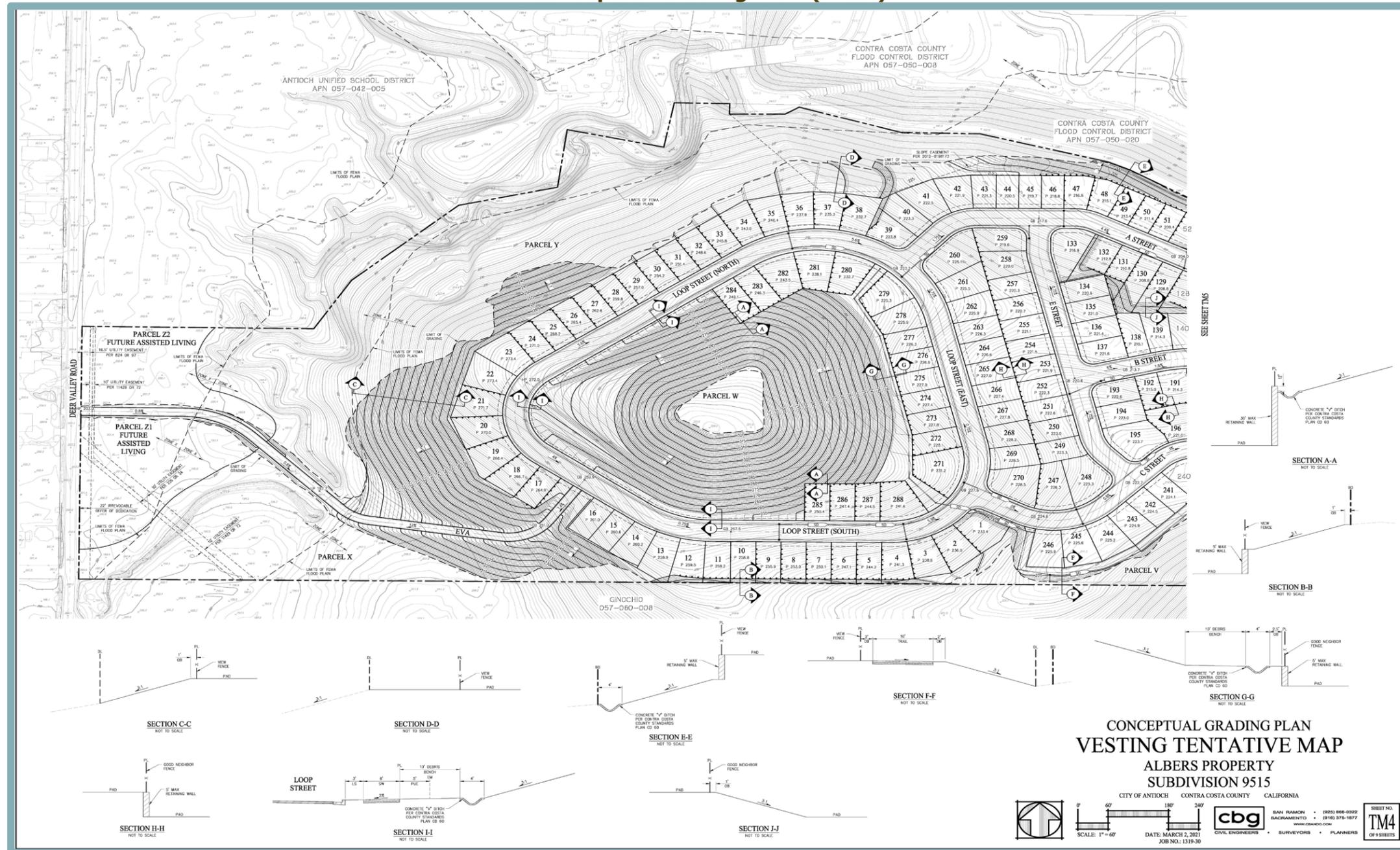
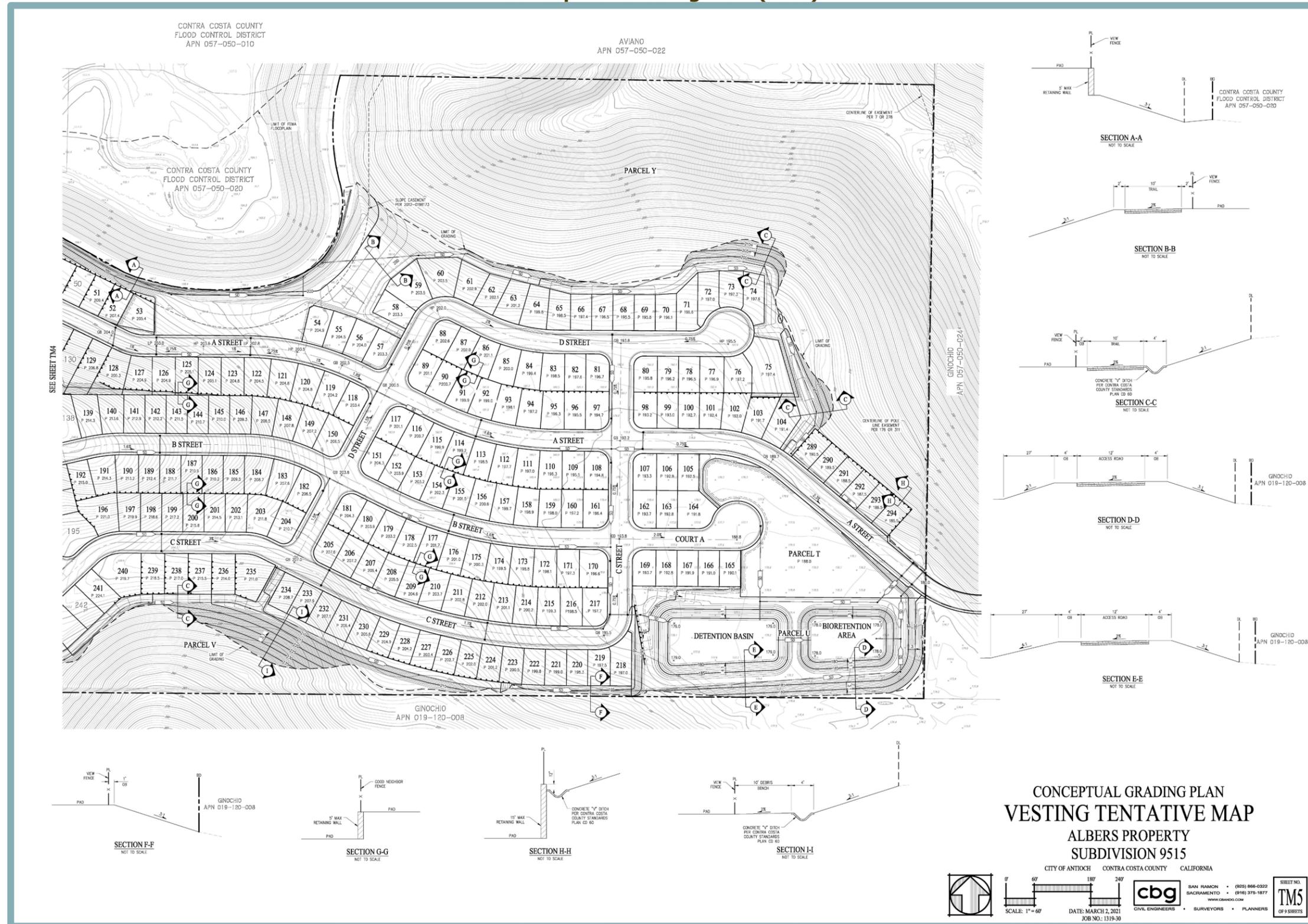


Figure 8
Conceptual Grading Plan (East)



Discretionary Actions

Implementation of the proposed project would require the following discretionary actions by the City of Antioch:

- **General Plan Amendment.** The proposed project would require approval of a General Plan text and map amendment to the Sand Creek Focus Area of the General Plan to change the land use designations of the site from Hillside, Estate and Executive Residential/Open Space and Commercial/Open Space to Medium Low Density Residential/Open Space and Commercial/Open Space. A text amendment to the Sand Creek Focus Area of the General Plan would also be required to add the Albers Ranch Sub Area to the Sand Creek Focus Area.
- **Master Development Plan/Rezone/Development Agreement.** The proposed project would require a rezone from Study District to HPD. HPD would include development standards for the single-family residential portion of the project. The Development Agreement would allow the City and the applicant to enter into an agreement to assure the City that the proposed project would be completed in compliance with the plans submitted by the applicant, and assure the applicant of vested rights to develop the project.
- **Vesting Tentative Subdivision Map.** The proposed project would require approval of a VTM for the subdivision of the project site into multiple parcels to accommodate 294 single-family residential units, a parcel for a potential future assisted living facility and neighborhood commercial land uses, and recreation, parks, and open space.
- **Resource Management Plan.** Pursuant to Section 4.4.6.7(t) of the City of Antioch General Plan, the applicant will prepare a Resource Management Plan for City approval.

G. ENVIRONMENTAL CHECKLIST

The following Checklist contains the environmental checklist form presented in Appendix G of the CEQA Guidelines. The checklist form is used to describe the impacts of the proposed project. A discussion follows each environmental issue identified in the checklist. Included in each discussion are project-specific mitigation measures recommended, as appropriate, as part of the proposed project.

For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant, and for which no mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared.

Less Than Significant with Mitigation Incorporated: An impact that requires mitigation to reduce the impact to a less-than-significant level.

Less-Than-Significant Impact: Any impact that would not be considered significant under CEQA relative to existing standards.

No Impact: The project would not have any impact.

I. AESTHETICS.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	✘	<input type="checkbox"/>
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	✘	<input type="checkbox"/>
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	✘	<input type="checkbox"/>
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	✘	<input type="checkbox"/>

Discussion

a,b. Examples of typical scenic vistas would include mountain ranges, ridgelines, or bodies of water as viewed from a highway, public space, or other area designated for the express purpose of viewing and sightseeing. In general, a project’s impact to a scenic vista would occur if development of the project would substantially change or remove a scenic vista. The City’s General Plan does not specifically identify any scenic vistas.

According to the California Scenic Highway Mapping System, the proposed project site is located approximately 14 miles northeast of the nearest State Scenic Highway, Interstate 680 (I-680). It should be noted that while not officially designated, SR 4, located approximately one mile east of the site, is an Eligible State Scenic Highway.¹ However, the project site is not visible from SR 4 and does not contain any scenic resources such as trees, rocks, or historic buildings. SR 160 in the project region has not been designated as an official State Scenic Highway.

The proposed project site is not located within the vicinity of a designated scenic vista. Therefore, the proposed project would not have a substantial adverse effect on a scenic vista and would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway. Thus, a **less-than-significant** impact would occur.

c. General Plan Policy 5.4.2.c states that view corridors from public spaces to natural ridgelines and landmarks, such as Mt. Diablo and distant hills, local ridgelines, the San Joaquin River, and other water bodies (such as Sand Creek), should be preserved. Specific view corridors identified in Policy 5.4.2.c include Somersville Road, Lone Tree Way, Hillcrest Avenue, SR 4, SR 160, James Donlon Boulevard, Deer Valley Road, and Empire Mine Road. However, Policy 5.4.2.c also recognizes that new development will inevitably result in some loss of existing views.

Distinguishing between public and private views is important when evaluating changes to visual character or quality, because private views are views seen from privately-owned

¹ California Department of Transportation. *California Scenic Highway Mapping System*. Available at: <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways> Accessed July 2021.

land and are typically associated with individual viewers, including views from private residences. Public views are experienced by the collective public, and include views of significant landscape features and along scenic roads. According to CEQA (PRC Section 21000 et seq.) case law, only public views, not private views, are protected under CEQA. For example, in *Association for Protection etc. Values v. City of Ukiah* (1991) 2 Cal.App.4th 720 [3 Cal. Rptr.2d 488], the court determined that “we must differentiate between adverse impacts upon particular persons and adverse impacts upon the environment of persons in general. As recognized by the court in *Topanga Beach Renters Assn. v. Department of General Services* (1976) 58 Cal.App.3d 188 [129 Cal.Rptr. 739]: “[A]ll government activity has some direct or indirect adverse effect on some persons. The issue is not whether [the project] will adversely affect particular persons but whether [the project] will adversely affect the environment of persons in general.” Therefore, the focus in this section is on potential impacts to public views.

Currently, rural single-family residences are located west of the project site, across Deer Valley Road. The area to the north and northeast of the project site is currently undergoing development with residential uses as part of the Aviano residential project and Promenade/Vineyards at Sand Creek Project, respectively. In addition, the area to the east of the site is approved for the Creekside/Vineyards at Sand Creek Project, which is anticipated to be at least partially developed prior to the proposed project. Thus, the visual character of the surrounding area will change substantially prior to construction of the proposed project. Nonetheless, consistent with CEQA Guidelines, the conditions at the time of the release of the Notice of Preparation have been used as the baseline conditions for analysis within this Initial Study.

Due to the topography of the project site and distance from SR 4, the proposed development would not affect views of Mount Diablo and the surrounding ridgelines as seen from SR 4 or other existing public roadways. Existing sensitive public viewers in the surrounding area primarily consist of motorists traveling on Deer Valley Road located west of the site. Given that Deer Valley Road does not include sidewalks or paved shoulders within the vicinity of the project site, pedestrian and bicycle traffic on the roadway is limited. Figure 9 and Figure 10 provide examples of typical existing views towards the project site from Deer Valley Road. As shown in the figures, views toward the site are of open grassland with some trees and vegetation associated with Sand Creek and the unnamed reach of San Creek in the foreground. The most prominent feature visible from Deer Valley Road towards the project site is the on-site western knoll in the midground. The background consists of rolling hills.

The proposed project would change the visual character and quality of the site from a vacant, undeveloped lot to a single-family residential subdivision. However, with development of the proposed project, approximately 49.1 acres of the project site, including the hillside within the northeastern portion of the site, the hillside along the center of the southern site boundary, the upper reaches of the existing knoll within the western portion of the site, and a setback between the future development parcels and the proposed residences would be preserved as open space as part of the project. The majority of development would be located in the eastern portion of the site, away from views afforded by the Deer Valley Road corridor. Thus, until the future assisted living and neighborhood commercial development area is built out, the existing foreground views offered from Deer Valley Road would remain unchanged, with the exception of the proposed EVA connecting to Deer Valley Road.

**Figure 9
Existing View from Deer Valley Road Looking Southeast**



**Figure 10
Existing View from Deer Valley Road Looking Northeast**



Although residences located on a lower portion of the western knoll would likely be visible in the midground, because the upper reaches of the knoll would remain as open space, the knoll would still be a prominent feature in the midground. In addition, because the hillsides within the northeastern portion of the site and along the center of the southern site boundary would be retained, views of the rolling hills in the background may remain visible. The existing vegetation along Sand Creek and the on-site reach of Sand Creek, as well as the open space area in the western portion of the site, would help to screen views of the proposed residences from Deer Valley Road.

While the proposed project would require approval of a rezone to change the zoning designation of the project site from Study District to HPD, the site has been previously anticipated for development with residential uses by the City and associated impacts to aesthetic resources have been evaluated in the General Plan EIR; the proposed project would not conflict with applicable zoning standards and other regulations governing scenic quality. The proposed HPD zoning designation would be subject to a Master Development Plan, which would list the development standards applicable to the project site, including setbacks, lot sizes and building heights for the single-family residential subdivision. The future assisted living facility and neighborhood commercial land uses would be required to comply with the Zoning Ordinance. In addition, the project would be subject to Design Review by the City of Antioch per Section 9-5.2607 of the Municipal Code. The purpose of the Design Review process is to promote the orderly development of the City, encourage high-quality site design and planning, protect the stability of land values and investments, and ensure consistency with the Citywide Design Guidelines Manual. The Design Review process would help to ensure that the proposed project would be visually compatible with the other currently approved projects in the vicinity. A CUP and Design Review would be required for the future development area, subject to additional project-specific environmental review at that time, which would also be required to comply with the Citywide Design Guidelines Manual.

The City's General Plan includes specific policies related to preservation of visual quality within hillside areas, including Policies 5.4.14a, 5.4.14b, 5.4.14c, 5.4.14d, 5.4.14e, and 5.4.14f. The proposed Albers Ranch Sub Area text for the GPA includes Hillside Design Policies, which are consistent with the policies of the City's General Plan. Per General Plan Policy 5.4.14b, projects within hillside areas must be designed to protect important natural features and to minimize the amount of grading. The following grading guidelines are provided:

- Slopes less than 25%: Redistribution of earth over large areas may be permitted.
- Slopes between 25% and 35%: Some grading may occur, but landforms need to retain their natural character. Split-level designs and clustering are encouraged as a means of avoiding the need for large padded building areas.
- Slopes between 35% and 50%: Development and limited grading can occur only if it can be clearly demonstrated that safety hazards, environmental degradation, and aesthetic impacts will be avoided. Structures shall blend with the natural environment through their shape, materials and colors. Impact of traffic and roadways is to be minimized by following natural contours or using grade separations. Encouraged is the use of larger lots, variable setbacks and variable building structural techniques such as stepped or post and beam foundations are required.
- Slopes greater than 50%: Except in small, isolated locations, development in areas with slopes greater than 50% should be avoided.

Approximately 93.5 percent of the proposed grading would occur on slopes of 25 percent or less, and approximately 6.2 percent of the grading area would occur on slopes between 25 and 35 percent. Areas in which grading would occur on slopes between 35 and 50 percent would be limited to approximately 0.2 acres, while grading on slopes greater than 50 percent would not occur. The steepest areas of grading would generally be located in the area around the western knoll of the project site and the northeastern portion of the project site. Such grading activity would be necessary to ensure the stability of the existing hill forms, and would not adversely affect the visual character or quality of the project site. Thus, the proposed project would be generally consistent with applicable General Plan policies related to hillside grading.

Additionally, the project site would be rezoned to HPD, which is intended to promote a more harmonious visual and functional relationship between the natural and built environments of the City. The proposed project would be required to comply with Article 24 of the Antioch Zoning Code, which provides standards related to hillside development within the HPD district.

Based on the above, impacts related to degrading the existing visual character of the site and its surroundings or a conflict with applicable zoning and other regulations governing scenic quality would be **less-than-significant**.

- d. The project site is currently undeveloped, and, thus, does not contain any existing sources of light or glare. Implementation of the proposed project would develop the site with residential buildings, and, thus, would introduce new sources of light and glare where none currently exists. Potential sources of light and glare associated with the proposed project would include interior light spilling through windows, exterior lighting on homes, street lighting on the internal street system, and light reflected off windows. While the site does not currently contain sources of light or glare, all components of the proposed project would be subject to Design Review by the City of Antioch to ensure light and glare do not obstruct day or nighttime views in the area. Citywide design guidelines for landscaping, common space, and lighting prohibit the use of flood lights to light entire structures or yards and state that any exterior night lighting installed shall be of a low intensity, low-glare design, and shall be hooded to direct light downward onto the subject parcel and prevent spillover onto adjacent parcels.² Compliance with such standards would ensure that on-site lighting would be directed within the project site and would not substantially illuminate adjacent properties. In addition, the proposed site layout would cluster the majority of development within the eastern portion of the site and provide a buffer between the proposed residences and the future development area. Thus, until the future development area is built out, a substantial open space buffer would exist between Deer Valley Road and the nearest residence. Given the clustering of the proposed residential development, and the added assurance of the Design Review process, implementation of the project would result in a **less-than-significant** impact with respect to creating a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

² City of Antioch. *Citywide Design Guidelines Manual* [pg 6-43]. October 2009

II. AGRICULTURE AND FOREST RESOURCES.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	✘	<input type="checkbox"/>
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✘
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✘
d. Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✘
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	✘	<input type="checkbox"/>

Discussion

- a,e. The project site is currently undeveloped. Per the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP), the site is currently designated as “Farmland of Local Importance” and “Grazing Land”.³ The site does not contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Furthermore, the site is not zoned or designated in the General Plan for agriculture uses. Given the FMMP designations of the site, development of the proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use, or otherwise result in the loss of Farmland to non-agricultural use. Therefore, the proposed project would have a **less-than-significant** impact.
- b. The proposed project site is not under a Williamson Act contract and is not designated or zoned for agricultural uses.⁴ Therefore, buildout of the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract, and **no impact** would occur.
- c,d. The project area is not considered forest land (as defined in PRC Section 12220[g]), timberland (as defined by PRC Section 4526), and is not zoned Timberland Production (as defined by Government Code Section 51104[g]). Therefore, the proposed project would have **no impact** with regard to conversion of forest land or any potential conflict with forest land, timberland, or Timberland Production zoning.

³ California Department of Conservation. *California Important Farmland Finder*. Available at: <https://maps.conservation.ca.gov/DLRP/CIFF/>. Accessed July 2019.

⁴ Contra Costa County Department of Conservation and Development. *2016 Agricultural Preserves Map*. February 1, 2017.

III. AIR QUALITY.

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?	✘	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	✘	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Expose sensitive receptors to substantial pollutant concentrations?	✘	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	✘	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

a-d. The City of Antioch is located in the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The SFBAAB area is currently designated as a nonattainment area for State and federal ozone, State and federal fine particulate matter 2.5 microns in diameter (PM_{2.5}), and State respirable particulate matter 10 microns in diameter (PM₁₀) ambient air quality standards (AAQS). The SFBAAB is designated attainment or unclassified for all other AAQS. It should be noted that on January 9, 2013, the U.S. Environmental Protection Agency (USEPA) issued a final rule to determine that the Bay Area has attained the 24-hour PM_{2.5} federal AAQS. Nonetheless, the Bay Area must continue to be designated as nonattainment for the federal PM_{2.5} AAQS until such time as the BAAQMD submits a redesignation request and a maintenance plan to the USEPA, and the USEPA approves the proposed redesignation.

In compliance with regulations, due to the nonattainment designations of the area, the BAAQMD periodically prepares and updates air quality plans that provide emission reduction strategies to achieve attainment of the AAQS, including control strategies to reduce air pollutant emissions through regulations, incentive programs, public education, and partnerships with other agencies. The current air quality plans are prepared in cooperation with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG).

During construction of the project, various types of equipment and vehicles would temporarily operate on the project site. Construction exhaust emissions would be generated from construction equipment, demolition, grading, construction worker commutes, and construction material hauling for the entire construction period. The aforementioned activities would involve the use of diesel and gasoline powered equipment that would generate emissions of criteria pollutants. Project construction activities also represent sources of fugitive dust, which includes PM emissions. As construction of the proposed project would generate air pollutant emissions intermittently within the site, and the vicinity of the site, until all construction has been completed, construction is a potential concern because the proposed project is in a non-attainment zone for ozone and PM.

Furthermore, development of the proposed project would result in an increased number of vehicle trips associated with traffic to and from the project site. Operation of the proposed project would result in emissions associated with area sources such as gas combustion from heating mechanisms and landscape maintenance equipment. The additional traffic and operations associated with the proposed project could result in

increases in criteria pollutant emissions above thresholds established by the BAAQMD. Therefore, the proposed project could violate an air quality standard or result in a cumulatively considerable net increase of any criteria pollutant, and thus, may conflict with or obstruct implementation of the applicable air quality plan.

The major pollutants of concern are localized carbon monoxide (CO) emissions and toxic air contaminant (TAC) emissions. Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Implementation of the proposed project could increase traffic volumes on streets near the project site. Because the proposed project could cause an increase in the localized CO concentrations in the project vicinity, and would involve temporary TAC emissions associated with construction, the proposed project could expose sensitive receptors to substantial pollutant concentrations.

Accordingly, the proposed project could result in a ***potentially significant*** impact related to air quality.

Further analysis of this impact will be discussed in the Air Quality and Greenhouse Gas Emissions chapter of the Albers Ranch EIR being prepared for the project.

IV. BIOLOGICAL RESOURCES.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
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 Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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 US Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

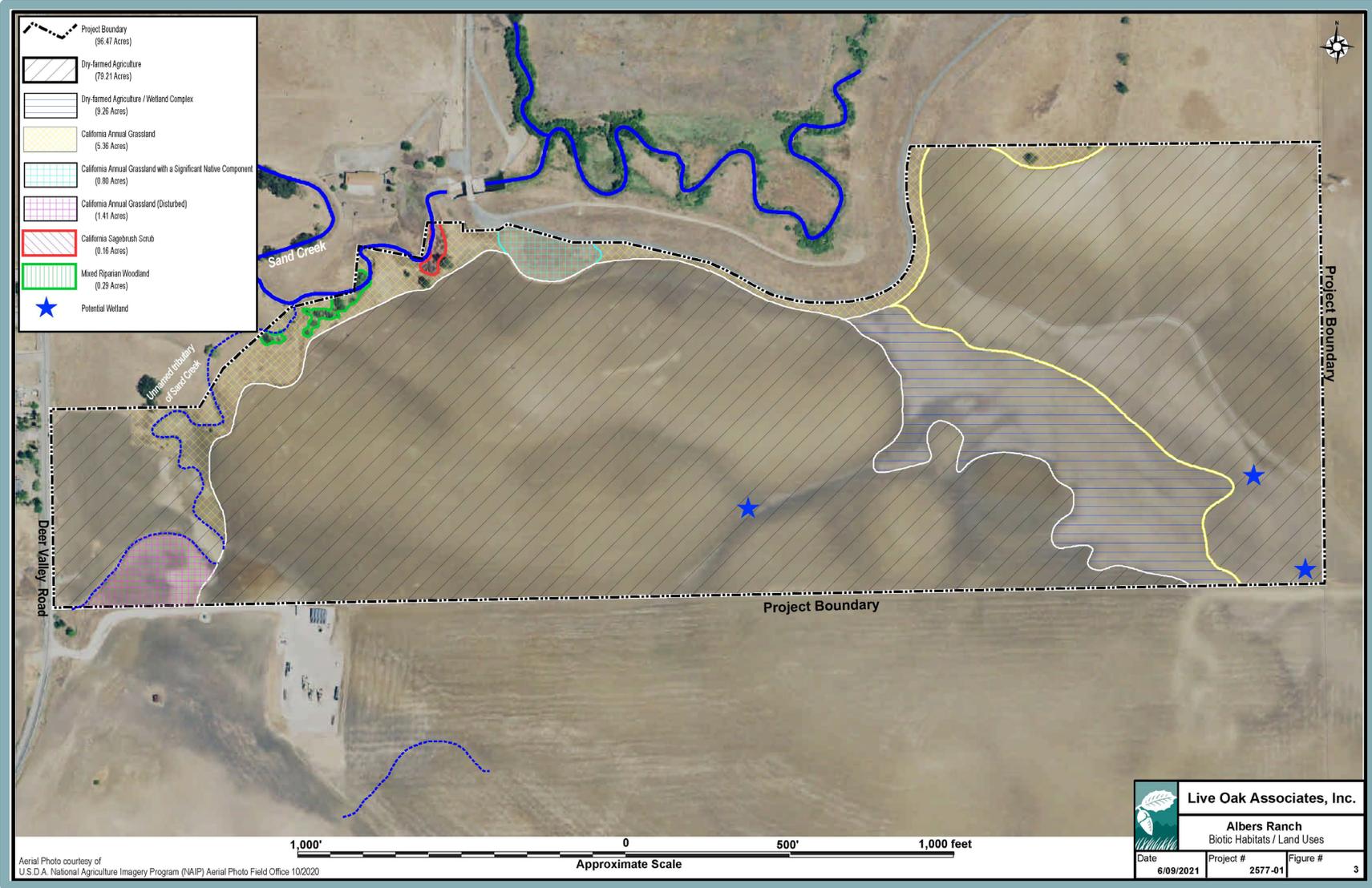
- a. The following discussion is based primarily on a Technical Biological Report prepared for the proposed project by Live Oak Associates, Inc. (see Appendix A).⁵

Currently, the project site is undeveloped, and consists primarily of dry-farmed wheat with some native grassland areas and a portion of the Sand Creek riparian area, a tributary to Marsh Creek, in the western portion of the site. Hydrological features were identified on-site, including the channels of Sand Creek and its unnamed tributary, as well a potential wetland occurring in the eastern portion of the site (see Figure 11). In addition, mixed riparian habitat occurs along the southern banks of the unnamed tributary to Sand Creek.

The Technical Biological Report was prepared in order to address the potential for the proposed project to result in a substantial adverse effect to any special-status species which occupy, or have the potential to occupy, the project site. Special-status species include those plant and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the federal and State Endangered Species Acts. Both acts afford protection to listed and proposed species. In addition, California Department of Fish and Wildlife (CDFW) Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue, U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern, sensitive species included in USFWS Recovery Plans, and CDFW special-status invertebrates are all considered special-status species.

⁵ Live Oak Associates, Inc. *Albers Project Site, Technical Biological Report, Antioch, California*. August 9, 2021.

Figure 11
Biotic Habitats and Land Uses



Although CDFW Species of Special Concern generally do not have special legal status, they are given special consideration under CEQA. In addition to regulations for special-status species, most birds in the U.S., including non-status species, are protected by the Migratory Bird Treaty Act (MBTA) of 1918. Under the MBTA, destroying active nests, eggs, and young is illegal. In addition, plant species on California Native Plant Society (CNPS) Lists 1 and 2 are considered special-status plant species and are protected under CEQA.

As part of the Technical Biological Report prepared for the proposed project, Live Oak Associates, Inc. conducted a search of published records of special-status plant and wildlife species for the Antioch South United States Geological Survey (USGS) 7.5" quadrangle, in which the project site occurs, and for the eight surrounding quadrangles, using the California Natural Diversity Data Base (CNDDDB) Rarefind 5 application. The intent of the database review was to identify documented occurrences of special-status species in the vicinity of the project area, to determine their locations relative to the project site, and for use in the field assessment to identify habitats suitable for special-status species within the site. Additional sources of information used for the analysis include *Listed Plants and Listed Animals* (USFWS 2021), *State and Federally Listed Endangered and Threatened Animals of California* (CDFW 2021), *The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2021), *California Bird Species of Special Concern* (Shuford and Gardall 2008), and *California Amphibian and Reptile Species of Special Concern* (Thompson et al. 2016). It should be noted that plant and wildlife species that are not considered special-status, as defined above, were excluded from the analysis, as such species are not protected under CEQA.

After completing the database review, a field survey of the project site was conducted by Live Oak Associates, Inc. on May 24, 2021. The results of the CNDDDB search, the site survey, and other queries conducted as part of the Technical Biological Report are discussed below.

Special-Status Plants

Based on the results of the CNDDDB search and the CNPS nine-quadrangle search, a total of 44 special-status plant species have been recorded within the project region. However, most special-status plant species known to occur, or to once have occurred, in the project region are considered absent from the site due to the absence of suitable habitat. For instance, several of the listed species require the presence of serpentine soils or inland dunes, neither of which are provided on the project site. Additionally, several species are considered absent from the site because the species is a perennial shrub or herb that would have been observed if present during the May 2021 site survey. Several other special-status plant species identified in the CNDDDB and CNPS search are considered unlikely to occur on-site considering that habitats on-site are extremely limited (e.g., grasslands occurring at the margins of the wheat field) or extremely marginal (e.g., due to decades of agricultural disturbances in the region). In addition, the special-status plant species may not be known to occur in the project vicinity (e.g., within a three-mile radius) and/or have not been observed in many decades in the project region.

However, the site does provide potential habitat for 12 special-status species. The soils of the project area are alkaline, and grasslands occurring at the edges of the wheat fields on alkaline soils, and/or wetlands occurring on alkaline soils, may provide potential habitat for several special-status plant species including: Contra Costa goldfields, alkali milk-vetch, heartscale, brittlescale, lesser saltscale, dwarf downingia, Jepson's coyote-thistle, shining navarretia, bearded popcornflower, California alkali grass, and long-styled sand-

spurrey. Additionally, the San Joaquin spearscale has been observed on-site in two different locations in the past.

Given that the site includes habitat that is suitable for the aforementioned species, development of the proposed project could adversely affect special-status plant species. Without focused floristic surveys during the appropriate blooming season in all potentially suitable habitats, a potentially significant impact could occur.

Special-Status Wildlife

Based on the results of the CNDDDB search, a total of 38 special-status wildlife species occur, or once occurred, within the project area. Of the 38 species, 21 would be considered absent or unlikely to occur on-site due to lack of suitable habit for the species. The remaining 17 special-status wildlife species may be foragers or transients to the site, may be residents of the site, or may occur within areas adjacent to the site. Because bats were not observed during reconnaissance surveys, and on-site trees do not support suitable roosting habitat for bats, any special-status bat species in the project area are expected to forage on-site only. As a result, impacts to special-status bats are hereby dismissed from further discussion. Therefore, the proposed project has the potential to result in adverse impacts to the following species: nesting migratory birds and raptors, including Swainson's hawk, white-tailed kite, northern harrier, golden eagle, burrowing owl, short-eared owl, loggerhead shrike, and grasshopper sparrow; vernal pool fairy shrimp; vernal pool tadpole shrimp; California tiger salamander; California red-legged frog; western pond turtle; American badger; and San Joaquin kit fox. Each species is further evaluated below.

Nesting Migratory Birds and Raptors

Building of the project during the nesting period for migratory birds (i.e., typically between February 1 to August 31), including initial site grading, soil excavation, and/or tree and vegetation removal, could pose a risk of nest abandonment and death of any live eggs or young that may be present nesting within or near the site. The existing trees and riparian habitat within the project site may support nesting migratory birds and raptors, including the Swainson's hawk, white-tailed kite, northern harrier, golden eagle, burrowing owl, short-eared owl, loggerhead shrike, and grasshopper sparrow, as discussed in further detail below.

Swainson's Hawk

Swainson's hawk is a State-listed threatened species afforded protection pursuant to the California Endangered Species Act. The species is protected from direct take under the federal MBTA. The Swainson's hawk inhabits open to semi-open areas at low to middle elevations in valleys, dry meadows, foothills, and level uplands. The species nests almost exclusively in trees and will nest in almost any tree species that is at least 10 feet tall. Nests are constructed in isolated trees that are dead or alive along drainages and in wetlands, or in windbreaks in fields and around farmsteads. Swainson's hawks occasionally nest in shrubs, on telephone poles, and on the ground. Foraging habitats include alfalfa fields, fallow fields, beet, tomato, and other low-growing row or field crops, dry-land and irrigated pasture, and rice land when not flooded. During the nesting season, Swainson's hawks usually forage within two miles of their nests.

According to the Technical Biological Report, the trees along the margin of the site support suitable nesting habitat while the remainder of the site supports foraging habitat for the Swainson's hawk. In addition, 30 documented sightings of the hawk have occurred within

a 10-mile radius of the project site, with the closest observation being within 0.25-mile of the site. Therefore, the Swainson's hawk is known to nest and forage within the area, and has the potential to occur on-site. The loss of Swainson's hawk individuals would constitute a significant impact under CEQA. Thus, the development of the proposed project could result in a potentially significant impact to Swainson's hawk.

White-Tailed Kite

The white-tailed kite is a "Fully Protected" species under the California Fish and Game Code (CFG) and is protected under the federal MBTA. The white-tailed kite is typically found foraging in grassland, marsh, or cultivated fields with dense-topped trees or shrubs for nesting and perching. The species nests in a wide variety of trees of moderate height and occasionally in tall bushes, such as coyote bush. Although the surrounding terrain may be semi-arid, the species often resides near water sources, where prey is more abundant. The particular characteristics of the nesting site do not appear to be as important as its proximity to a suitable food source.

The trees along Sand Creek provide potentially suitable nesting habitat for the species. If white-tailed kite nests are present in the project area, disturbance associated with project construction could result in nest abandonment, loss of young, or reduced health and vigor of eggs and/or nestlings and could ultimately result in the take of nestling or fledgling white-tailed kites. Therefore, a potentially significant impact to the species could occur.

Northern Harrier

The northern harrier is designated as a California species of special concern. The northern harrier occurs in grasslands, seasonal marshes, and some agricultural habitats. Northern harrier individuals have not been recorded within the project area. However, suitable habitat for the species may occur within the project site. Therefore, the potential exists for northern harrier to reside and/or nest within the project area. If northern harrier nests are present in the project area, disturbance associated with project construction could result in nest abandonment, loss of young, or reduced health and vigor of eggs and/or nestlings and could ultimately result in the take of nestling or fledgling northern harriers. Thus, the proposed project could result in a potentially significant impact to the northern harrier.

Golden Eagle

The golden eagle is designated as a California species of special concern and is fully protected under the Bald and Golden Eagle Protection Act. Golden eagles are found breeding throughout western North America in remote open habitats. Typical habitats in North America include savannah woodland habitats, grasslands, aspen parkland, high and low deserts, and in taiga habitats. Golden eagles nest from January until September, with peak nesting occurring in March through July. Golden eagles are very sensitive to disturbance near the nest site, particularly in remote regions where human activities are minimal.

Golden eagles have been identified nesting in a bluegum eucalyptus growing along the bank of Sand Creek. If an active nest is identified within the zone of project influence the year that construction commences, project construction could result in impacts or deleterious disturbance to the nesting golden eagles. Specifically, disturbance could result in nest abandonment, loss of young, or reduced health and vigor of eggs and/or nestlings and could ultimately result in the take of nestling or fledgling golden eagles. Accordingly, a potentially significant impact to the species could occur.

Burrowing Owl

The burrowing owl is a California species of special concern. Burrowing owl habitat is usually found in annual and perennial grasslands, characterized by low-growing vegetation. Often, the burrowing owl utilizes rodent burrows, typically California ground squirrel burrows, for nesting and cover. The species may also on occasion dig their own burrows or use man-made objects such as concrete culverts or rip-rap piles for cover.

According to the Technical Biological Report, the site contains ground squirrel burrows, indicative of suitable habitat for the burrowing owl. Should site demolition or grading occur during nesting season for the species (February 1 through August 31), nests and nestlings that may be present would likely be destroyed. Overwintering burrowing owls may also be buried in their roost burrows outside of the nesting season (September 1 through January 31). Any actions related to site development that result in the mortality of burrowing owls would constitute a violation of the federal MBTA and provisions of the CFGC and would constitute a significant impact under CEQA. Thus, the development of the proposed project could result in a potentially significant impact to the burrowing owl.

Short-Eared Owl

The short-eared owl is designated as a California species of special concern. The species requires dense ground cover to conceal nests, and typically occurs in wide open spaces including marshes, open shrublands, grassland, prairie, and agricultural field habitats. Short-eared owl individuals have not been recorded within three miles of the project site; however, suitable habitat for the owl occurs within the project site. Therefore, the potential exists for short-eared owls to reside and/or nest within the project area. If short-eared owl nests are present in the project area, disturbance associated with project construction could result in nest abandonment, loss of young, or reduced health and vigor of eggs and/or nestlings and could ultimately result in the take of nestling or fledgling short-eared owl individuals. Thus, the proposed project could result in a potentially significant impact to the short-eared owl.

Loggerhead Shrike

The loggerhead shrike is a California species of special concern and is protected from direct take under the MBTA. In addition, the loggerhead shrike's nest, eggs, and young are protected under CFGC Sections 3503, 3503.5, and 3800. The shrike is a small bird of open and often arid habitats, and prefers areas various perching locations. The loggerhead shrike preys upon insects and small birds, mammals, amphibians, reptiles, and aquatic species. The species typically constructs a stick nest on a stable branch in a densely foliated tree or shrub. The conversion of rural areas into subdivisions or commercial areas steadily reduces the available habitat for the loggerhead shrike.

Ruderal habitat and the riparian woodland provide suitable hunting grounds for loggerhead shrikes and, as a result, the trees on and immediately adjacent to the project site along Sand Creek provide potentially suitable nesting habitat. If loggerhead shrike nests are present in the project area, disturbance associated with project construction could result in nest abandonment, loss of young, or reduced health and vigor of eggs and/or nestlings and could ultimately result in the take of nestling or fledgling loggerhead shrike individuals. Thus, the development of the proposed project could result in a potentially significant impact to the loggerhead shrike.

Grasshopper Sparrow

The grasshopper sparrow is designated as a California species of special concern. The grasshopper sparrow occurs in California during the spring and summer, and is found in open grassland with scattered shrubs. Grasshopper sparrow individuals have not been recorded within three miles of the project site; however, marginal suitable breeding habitat for the sparrow occurs within the project site. Therefore, the potential exists for the grasshopper sparrow to reside and/or nest within the project area. If grasshopper sparrow nests are present in the project area, disturbance associated with project construction could result in nest abandonment, loss of young, or reduced health and vigor of eggs and/or nestlings and could ultimately result in the take of nestling or fledgling grasshopper sparrow individuals. Thus, the proposed project could result in a potentially significant impact to the grasshopper sparrow.

Vernal Pool Fairy Shrimp

Vernal pool fairy shrimp was designated as threatened in the species' entire range on September 19, 1994. Critical habitat for the species was designated on August 6, 2003. The vernal pool fairy shrimp occupies a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools. The species tends to occur in smaller pools (less than 0.05-acre) that are most commonly found in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands. The shrimp has also been collected in large vernal pools (e.g., 25 acres).

The project site has the potential to support vernal pool fairy shrimp, as a seasonal wetland complex in the eastern portion of the site is capable of supporting vernal pool branchiopods. Thus, the development of the proposed project could result in a potentially significant impact to the vernal pool fairy shrimp.

Vernal Pool Tadpole Shrimp

Vernal pool tadpole shrimp live in season pools that dot the grasslands of the Central Valley. Water in the pools is clear to murky, and the pools range from 55 square feet to almost 90 acres.

The project site has the potential to support vernal pool tadpole shrimp as a seasonal wetland complex in the eastern portion of the site is capable of supporting vernal pool branchiopods. Therefore, the development of the proposed project could result in a potentially significant impact to the vernal pool tadpole shrimp.

California Tiger Salamander

The California tiger salamander is a federally-listed threatened species. California tiger salamanders occur in grasslands and open oak woodlands that provide suitable over summering and/or breeding habitats. California tiger salamanders spend the majority of their lives underground. The species typically only emerge from their subterranean refugia for a few nights each year during the rainy season to migrate to breeding ponds. Adult California tiger salamanders have been observed up to 1.3 miles from breeding ponds. As such, unobstructed migration corridors are an important component of California tiger salamander habitat.

According to the Technical Biological Report, Sand Creek and the seasonal wetlands on and adjacent to the site support potentially suitable breeding habitat for the California tiger salamander. Impacts to individual California tiger salamander or known breeding pools is

considered a significant impact under CEQA. As a result, implementation of the proposed project could result in a potentially significant impact to California tiger salamander.

California Red-Legged Frog

The California red-legged frog was federally-listed as threatened on May 23, 1996 and is protected pursuant to the Federal Endangered Species Act. The California red-legged frog is typically found in ponds and slow-flowing portions of perennial and intermittent streams that maintain water in the summer months. The species is also found in hillside seeps that maintain pool environments or saturated soils throughout the summer months. Populations likely cannot be maintained if all surface water disappears (i.e., surface water is not available for egg laying and larval development habitat). Larval California red-legged frogs require 11 to 20 weeks of deep water to reach metamorphosis, in water depths of 10 to 20 inches. Riparian vegetation such as willows and emergent vegetation such as cattails are preferred red-legged frog habitats, though not necessary for the species to be present. California red-legged frogs also use upland habitats for migration and dispersal. The USFWS' Recovery Plan for the California Red-Legged Frog states that frog's overland excursions through uplands can vary between 0.25-mile up to three miles during the course of a wet season, and frogs "have been observed to make long-distance movements that are straight-line, point to point migrations rather than using corridors for moving in between habitats".

According to the Technical Biological Report, potentially suitable habitat for the California red-legged frog is present within the project site in the form of riparian habitat associated with Sand Creek as well as the tributary of Sand Creek in the western portion of the project site. The California red-legged frog may also be expected to move out of the riparian area onto the upland portion of the site. Injury or mortality of an individual California red-legged frog would be considered a significant impact under CEQA. As a result, implementation of the proposed project could result in a potentially significant impact to California red-legged frog.

Western Pond Turtle

The western pond turtle is a California "species of special concern." The western pond turtle is a habitat generalist, inhabiting a wide range of fresh and brackish, permanent and intermittent water bodies from sea level to approximately 4,500 feet mean sea level (msl). Typically, the species is found in ponds, marshes, ditches, streams, and rivers with rocky or muddy bottoms. The species is most often found in aquatic environments with plant communities dominated by watercress, cattail, and other aquatic vegetation. The species usually only leaves the aquatic site to reproduce and to overwinter. Western pond turtles may overwinter on land or in water or may remain active in water during the winter season, depending on latitude, water temperature, and habitat type. The western pond turtle also requires upland areas for burrowing habitat, where the species digs nests and buries its eggs. Such nests can extend from 52 feet to 1,219 feet from watercourses; however, most western pond turtles' nest in uplands within 250 meters (820 feet) of water. Upland nest sites are usually found in areas with sparse vegetation. Sunny, barren, and undisturbed (not disked) land provides optimal habitat, while shady riparian habitat and planted agricultural fields do not provide suitable habitat.

According to the Technical Biological Report, the proposed project would result in the loss of a small area of upland habitat for western pond turtles. Impacts to the western pond turtle habitat would be considered minimal. However, the western pond turtle could move

into the construction zone, which may result in mortality to individual western pond turtles. The loss of individual western pond turtles would constitute a significant impact under CEQA. As a result, implementation of the proposed project could result in a potentially significant impact to western pond turtle.

American Badger

American badger is a California “species of special concern.” The species is found in a variety of habitats, especially in open habitats such as oak-savannah and grasslands where the species’ presence is typically identified by distinctive, large underground dens (burrows) excavated in friable (loose) soils. The nocturnal mammal is rarely observed during field surveys.

According to the Technical Biological Report, suitable habitat for the American badger occurs on-site, and American badger individuals have been observed in the project vicinity. During the site visit in May of 2021, badgers or badger burrows were not observed on-site. However, should badgers occur on-site at the time of construction, the proposed project could result in the mortality of individuals of the species, which would constitute a significant impact under CEQA. Thus, the development of the proposed project could result in a potentially significant impact to the American badger.

San Joaquin Kit Fox

The San Joaquin kit fox is a federally- and State-listed endangered species. The San Joaquin kit fox live primarily in the lowlands of the San Joaquin Valley of California, but are also known to occur in several counties in the coast mountain ranges, including Santa Barbara, San Luis Obispo, Monterey, San Benito, Santa Clara, Contra Costa, and Alameda counties. The species is usually found in open grassland and shrub land communities, but has also been observed in ruderal plant communities.

According to the Technical Biological Report, the project site supports marginal habitat for the San Joaquin kit fox as it has been highly modified for agricultural use (e.g., dryland farmed) and the site sits on the western edge of development in the region of Antioch. While an extensive survey for burrows was not completed, suitable burrows were not detected. In fact, the San Joaquin kit fox have not been observed in the region for more than 25 years. Therefore, the site supports only marginal foraging and dispersal habitat for the kit fox. However, if the species was detected prior to construction, site development could result in harm or injury to an individual kit fox, and a potentially significant impact could occur.

Off-site Improvement Area

Should the Creekside/Vineyards at Sand Creek Project not be developed, an alternative access roadway may be constructed as part of the proposed project. The alternative roadway would connect the northern portion of the site to the future Sand Creek Road, following the eastern boundary of the CCCFCD property and Basin and crossing Sand Creek. The optional roadway was included as part of the Aviano Project and has been analyzed within the associated EIR. Accordingly, should the alternative access roadway be constructed as part of the proposed project, the project applicant would be required to

comply with all applicable mitigation measures related to the roadway set forth in the EIR prepared for the Aviano Project.

Conclusion

Based on the above, implementation of the proposed project could potentially affect special-status plant species, golden eagle, Swainson's hawk, burrowing owl, and other nesting migratory birds and raptors, including the white-tailed kite, northern harrier, short-eared owl, loggerhead shrike, and grasshopper sparrow, as well as vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, California red-legged frog, western pond turtle, American badger, and the San Joaquin kit fox.

Thus, the proposed project could have an adverse effect, either directly or through habitat modifications, on species identified as special-status species in local or regional plans, policies, or regulations, or by the CDFW or the USFWS, and a **potentially significant** impact could result.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level. It should be noted that in July 2007, the East Contra Costa County (ECCC) Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) was adopted by Contra Costa County, other member cities, the USFWS, and the CDFW. The City of Antioch, however, declined to participate in the HCP/NCCP. Nonetheless, the mitigation measures below include language to reflect the possibility that the City may, in the future, enter into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP covered species or otherwise adopt a different HCP/NCCP.

Special-Status Plants

IV-1.

Prior to initiation of ground-disturbing activities on the project site and off-site improvement areas, the project applicant shall retain a qualified biologist to conduct focused botanical surveys for Contra Costa goldfields, alkali milk-vetch, heartscale, brittlescale, lesser saltscale, dwarf downingia, Jepson's coyote-thistle, shining navarretia, bearded popcirtflower, California alkali grass, long-styled sand spurrey, San Joaquin spearscale, and all plants that are considered locally rare as listed in the East Bay Chapter of the CNPS Database of Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties for the Marsh Creek/Lone Tree Valley area. Project construction shall not be initiated until all special-status plant surveys are completed and the mitigation is implemented, if necessary and required prior to starting construction.

A special-status plant survey report that includes the methods used, survey participants, and associated findings shall be prepared and submitted to the City no more than 30 days following the completion of the final site visit. A record of any special-status plant species identified within the project site during the preconstruction surveys shall be submitted to the CNDDDB. If new special-status plant populations are not found on the site during the appropriately timed surveys, additional mitigation is not required. If construction is not started within two years after the rare plant surveys are completed, the City may require additional rare plant surveys.

If special-status plants are observed on the site during the survey, the populations shall be avoided to the maximum degree possible during project development, and a Mitigation and Monitoring Plan shall be prepared detailing the measures to be implemented to avoid the plant population. Measures shall include establishment of appropriate buffers during construction, fencing of the population prior to and during construction, and regular monitoring of the preserved population by a biologist during and after construction activities. The Mitigation and Monitoring Plan shall be implemented prior to the initiation of project grading. If the plant populations cannot be avoided, the applicant shall hire a qualified biologist to prepare a seed collection and replanting plan in coordination with the City of Antioch to reduce impacts to the identified special-status plant populations, subject to review and approval by the City of Antioch Community Development Department.

Swainson's Hawk

IV-2(a). *Prior to initiation of ground-disturbing activities, the project applicant shall require all construction workers to attend tailgate training that includes a description of the species, a brief summary of the species biology, and minimization measures and instructions of what to do if a Swainson's hawk is observed on a near the construction zone. A sign-in sheet shall be distributed to all participants of the training program and submitted, along with a written summary of the training, to the City of Antioch Community Development Department within two weeks of training completion.*

IV-2(b) *Prior to any project-related ground disturbance that occurs during the nesting season (March 15th to September 15th) within a half-mile of a potential nest tree, a qualified biologist shall conduct preconstruction surveys within the construction zones and adjacent lands to identify any nesting pairs of Swainson's hawks within 14 days prior to the onset of ground disturbance. Preconstruction surveys are not required for construction activities located farther than a half-mile from a potential nest tree. Surveys shall follow the protocol in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000), including the survey period lengths identified therein. A written summary of the survey results shall be submitted to the City of Antioch Community Development Department.*

If active nests are not found during preconstruction surveys, further mitigation is not necessary. If any active nests are discovered in or near proposed construction zones, the qualified biologist shall establish a suitable construction-free buffer around the active nest site. The buffer shall be identified on the ground with flagging or fencing and shall be maintained until the qualified biologist has determined that the young have fledged.

As an alternative to completion of this mitigation measure, the project applicant could comply with one of the following conditions:

- 1) Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by*

the East Contra Costa County Habitat Conservancy (Conservancy), provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCCHCP/NCCP Covered Species; or

- 2) Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and FWS have approved the conservation plan.

Golden Eagle

IV-3(a). *Prior to initiation of ground-disturbing activities, the project applicant shall require all construction workers to attend tailgate training that includes a description of the species, a brief summary of the species biology, and minimization measures and instructions of what to do if a golden eagle is observed on a near the construction zone. A sign-in sheet shall be distributed to all participants of the training program and submitted, along with a written summary of the training, to the City of Antioch Community Development Department within two weeks of training completion.*

IV-3(b). *Prior to initiation of ground-disturbing activities or tree removal, preconstruction surveys shall be conducted concurrently with the preconstruction surveys for Swainson's hawk nests as required by Mitigation Measure IV-2(b) above. A written summary of the survey results shall be submitted to the City of Antioch Community Development Department.*

If no active nesting golden eagles are identified during survey(s), project construction may commence without further regard for protection of nesting eagles. If active nesting golden eagles are identified during the preconstruction surveys within a half-mile of the site and within the line of sight from disturbance to the nest site, biological monitors shall monitor the nest in order to establish baseline behavioral data. Based on the baseline behavioral data and location of the nest (i.e., whether the nest is remote or in/close to town, and whether existing disturbances are present), a construction-free buffer shall be established. The construction-free buffer shall be a minimum of 800 feet and can be increased based on the biological monitor's observations of the behavior at the nest. Project-related disturbance shall not be allowed within any established buffer until the biologist has determined that the young have fledged.

Burrowing Owl

IV-4(a). *Prior to initiation of ground-disturbing activities, the project applicant shall require all construction workers to attend tailgate training that includes a description of the species, a brief summary of the species biology, and minimization measures and instructions of what to do if a burrowing owl is observed on a near the construction zone. A sign-in sheet shall be distributed to all participants of the training program and submitted, along with a written summary of the training, to the City of Antioch Community Development Department within two weeks of training completion.*

IV-4(b). *Prior to initiation of ground-disturbing activities, a preconstruction survey for burrowing owls shall be conducted. The CDFG's Staff Report on Burrowing Owl Mitigation (CDFG 2012) states that take avoidance (preconstruction) surveys shall be conducted within 14 days prior to ground disturbance. As burrowing owls may recolonize a site after only a few days, time lapses between project activities trigger subsequent take avoidance surveys, including, but not limited to, a final survey conducted within 24 hours prior to ground disturbance to ensure absence of the species. Surveys shall ensure 100 percent visual coverage. The results of the survey shall be submitted to the City of Antioch Community Development Department.*

If burrowing owls or fresh sign of burrowing owls are not observed during preconstruction surveys, further mitigation is not required and construction may proceed. If burrowing owls or their recent sign are detected on the site, occupied burrows shall be identified by the monitoring biologist and a construction-free buffer (up to 250 feet) shall be established and maintained until a qualified biologist has determined the burrowing owl has abandoned the burrow.

Nesting Migratory Birds, Including Nesting Raptors and Protected Birds

IV-5(a). *Prior to initiation of ground-disturbing activities, the project applicant shall require all construction workers to attend tailgate training that includes a description of the species, a brief summary of the species biology, and minimization measures and instructions of what to do if an active bird nest is observed on a near the construction zone. A sign-in sheet shall be distributed to all participants of the training program and submitted, along with a written summary of the training, to the City of Antioch Community Development Department within two weeks of training completion.*

IV-5(b). *Prior to commencement of ground-disturbing activities or tree removal during the breeding season (typically between February 1st and August 31st, the project applicant shall retain a qualified biologist to conduct preconstruction migratory bird and raptor nesting surveys within 14 days prior to the onset of ground disturbance. The nesting migratory bird surveys shall cover the project site and the raptor nesting surveys shall encompass the site and lands within 250 feet of the site, where accessible. A written summary of the survey results shall be submitted to the City of Antioch Community Development Department. If nesting migratory birds or raptors are not identified during the surveys, further mitigation is not required.*

If nesting migratory birds or raptors are identified during the surveys, an appropriate construction-free buffer shall be established. The actual size of the buffer, which would be determined by the qualified biologist, will depend on the species, topography, and type of activity that would occur in the vicinity of the nest. The project buffer shall be monitored periodically by the qualified biologist to ensure compliance. Construction or earth-moving activity shall not occur within the established buffer until determined by a qualified biologist that the young have fledged.

Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

IV-6(a). *Prior to initiation of ground-disturbing activities, the project applicant shall require all construction workers to attend tailgate training that includes a description of the species, a brief summary of the species biology, and minimization measures and instructions of what to do if a listed shrimp is observed on a near the construction zone. A sign-in sheet shall be distributed to all participants of the training program and submitted, along with a written summary of the training, to the City of Antioch Community Development Department within two weeks of training completion.*

IV-6(b). *Prior to initiation of ground-disturbing activities, to mitigate for permanent impacts to shrimp habitat, the project applicant shall preserve occupied and potentially occupied habitat at a 3:1 ratio (preserved:impacted) and create additional habitat at a 2:1 ratio (created:impacted). Preservation or created habitat shall be via the purchase of mitigation land in fee title or via recordation of a conservation easement over the mitigation land preserving it in perpetuity as wildlife habitat. The easement shall be granted to a qualified conservation organization as defined by Section 815.3 of the California Civil Code. The preserved or created habitat shall be established at least a year prior to on-site impacts to vernal pool fairy shrimp or vernal pool tadpole shrimp habitat in order to monitor the new habitat's effectiveness, including a comparison to the existing on-site habitat with regards to appropriate hydrology for shrimp. Once the determination has been made that the created habitat supports the appropriate hydrology, the top four inches of topsoil of the on-site habitat planned to be impacted can be transferred to the mitigation site in the same day. Removal and placement of this topsoil shall be done in a systematic fashion that will avoid compaction of the soil.*

Prior to the start of construction, the project applicant shall prepare and submit to the City of Antioch a Habitat Mitigation and Management Plan (HMMP), which shall outline the requirements for managing preserved areas and created areas for five years, as well as success criteria for the created habitat. The HMMP will follow the guidelines for mitigation and monitoring of vernal pools issued by the USFWS (1994). The project applicant shall also establish an endowment fund, or other funding mechanism to provide for the long-term management, maintenance, and monitoring of the mitigation site.

In lieu of the above, prior to construction, the project applicant may purchase credits at a 1:1 ratio from an approved mitigation bank.

The project applicant may satisfy the requirements of this mitigation measure by providing the City of Antioch Community Development Department with a copy of a biological opinion issued by the USFWS that includes these, or other functionally equivalent, habitat preservation measures prior to the start of construction.

As an alternative to completion of this mitigation measure, the project applicant could comply with one of the following conditions:

1. Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or
2. Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.

California Tiger Salamander

IV-7(a). *Prior to initiation of ground-disturbing activities, the project applicant shall require all construction workers to attend tailgate training that includes a description of the species, a brief summary of the species biology, and minimization measures and instructions of what to do if California tiger salamander is observed on a near the construction zone. A sign-in sheet shall be distributed to all participants of the training program and submitted, along with a written summary of the training, to the City of Antioch Community Development Department within two weeks of training completion.*

IV-7(b) *Prior to initiation of ground-disturbing activities, a qualified biologist shall conduct a preconstruction survey of the seasonal wetlands in the eastern portion of the project site during the rainy season in order to determine whether they could be classified as breeding habitat for the California tiger salamander. A written summary of the survey results shall be submitted to the City of Antioch Community Development Department. If breeding habitat is not identified, further mitigation is not necessary. If the seasonal wetland is determined to be breeding habitat and cannot be avoided, the project applicant shall compensate for the loss of upland habitat at a minimum of a 3:1 impacts to replacement ratio. Mitigation land shall be permanently protected land within the Central California Distinct Population Segment (DPS) range of the California tiger salamander within 1.3 miles of a known breeding site, or as otherwise approved by CDFW and USFWS. Protection shall be accomplished through the purchase of the mitigation land in fee title or via recordation of a conservation easement over the mitigation land. In lieu of this mitigation prior to construction, the project applicant may purchase California tiger salamander credits at a 1:1 ratio from an approved mitigation bank.*

In addition, if breeding habitat is planned to be removed, the applicant shall comply with the provisions of the federal Endangered Species Act and shall obtain take authorization from the USFWS for project-related losses of the California tiger salamander habitat, as required by law. To obtain a take permit, consultation with the USFWS would need to be initiated either through a federal nexus (Section 7 consultation, usually through the U.S. Army Corps of Engineers (USACE) or the Bureau of Land Management. Proof of compliance shall be submitted to the City of Antioch Community Development Department.

As an alternative to completion of this mitigation measure, the project applicant could comply with one of the following conditions:

1. Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or
2. Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.

California Red-Legged Frog

IV-8(a). *Prior to initiation of ground-disturbing activities on the project site and off-site improvement areas, the project applicant shall require all construction workers to attend tailgate training that includes a description of California red-legged frog and its habitat and measures to be implemented to protect the frog and minimize take if the frog is observed on or near the construction zone. A sign-in sheet shall be distributed to all participants of the training program and submitted, along with a written summary of the training, to the City of Antioch Community Development Department within two weeks of training completion.*

IV-8(b). *A qualified biologist shall conduct preconstruction surveys for California red-legged frog prior to the initiation of ground-disturbing activities. If California red-legged frog are not encountered during the preconstruction surveys, further mitigation is not required. If California red-legged frog are present, they shall be relocated by the qualified biologist. The work areas shall be cleared and isolated with suitable wildlife exclusion fencing that would block the movement of California red-legged frogs from entering the work areas. A qualified biologist shall be on-site during particular times of construction to ensure California red-legged frog are not harmed, injured, or killed during project buildout.*

Upland habitats shall be managed via a long-term management plan to maintain the quality of the habitat for the movement and dispersal of California red-legged frog. Potential opportunities include, but are not limited to, enhancement of the channels and riparian corridor (e.g., formation of plunge pools), which would maximize opportunities to disperse from the ponds to even higher-quality habitat off-site.

In addition, if breeding habitat is planned to be removed, the applicant shall comply with the provisions of the federal Endangered Species Act and shall obtain take authorization from the USFWS for project-related losses, as required by law. To obtain a take permit, consultation with the USFWS would need to be initiated either through a federal nexus (Section 7 consultation, usually through the U.S. Army Corps of Engineers (USACE) or the Bureau of Land Management). Proof of compliance shall be submitted to the City of Antioch Community Development Department.

As an alternative to completion of this mitigation measure, the project applicant could comply with one of the following conditions:

1. Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or
2. Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.

Western Pond Turtle

IV-9(a). *Prior to initiation of ground-disturbing activities, the project applicant shall require all construction workers to attend tailgate training that includes a description of the species, a brief summary of the species biology, and minimization measures and instructions of what to do if western pond turtle is observed on or near the construction zone. A sign-in sheet shall be distributed to all participants of the training program and submitted, along with a written summary of the training, to the City of Antioch Community Development Department within two weeks of training completion.*

IV-9(b). *Implement Mitigation Measures IV-8(b). If western pond turtle are observed on-site, they shall be allowed to leave the site on their own or be located by a CDFW-approved biologist. If a western pond turtle nest is observed, a 50-foot construction-free buffer around the nest site shall be established and maintained until a qualified biologist determines the nest is no longer active.*

American Badgers

IV-10(a). *Prior to initiation of ground-disturbing activities, the project applicant shall require all construction workers to attend tailgate training that includes a description of the species, a brief summary of the species biology, and minimization measures and instructions of what to do if an American badger is observed on or near the construction zone. A sign-in sheet shall be distributed to all participants of the training program and submitted, along with a written summary of the training, to the City of Antioch Community Development Department within two weeks of training completion.*

IV-10(b). *The project applicant shall retain a qualified biologist to conduct a preconstruction survey to determine the presence or absence of badgers prior to initiation of ground-disturbing activities. If badgers are not identified, further mitigation is not required. If an active badger den is identified during preconstruction surveys within or immediately adjacent to an area subject to construction, a qualified biologist shall establish a construction-free buffer of up to 300 feet around the badger den. Once the biologist has determined that the badger has vacated the burrow, the burrow can be collapsed or excavated, and ground disturbance can proceed. Should the*

burrow be determined to be a natal or reproductive den, and because badgers are known to use multiple burrows in a breeding burrow complex, a biological monitor shall be present on-site during construction activities in the vicinity of the burrows to ensure that the buffer is adequate to avoid direct impact to individuals or natal/reproductive den abandonment. The monitor shall be required to be present until it is determined that the badger young are of an independent age and construction activities would not harm individual badgers. A written summary of the survey results shall be submitted to the City of Antioch Community Development Department.

San Joaquin Kit Fox

IV-11(a). Prior to initiation of ground-disturbing activities, the project applicant shall require all construction workers to attend tailgate training that includes a description of the species, a brief summary of the species biology, and minimization measures and instructions of what to do if a kit fox is observed on a near the construction zone. A sign-in sheet shall be distributed to all participants of the training program and submitted, along with a written summary of the training, to the City of Antioch Community Development Department within two weeks of training completion.

IV-11(b). A qualified biologist shall conduct preconstruction surveys no more than 14 days prior to site grading to determine the presence or absence of kit fox. If kit fox is not identified during the surveys, further mitigation is not required. If an active kit fox den is identified during preconstruction surveys within or immediately adjacent to an area subject to construction, a qualified biologist shall establish a construction free buffer of up to 300 feet around the San Joaquin kit fox den. Once the biologist has determined that the San Joaquin kit fox has vacated the den, the den can be collapsed or excavated, and ground disturbance can proceed. Should the den be determined to be a natal or reproductive den, a biological monitor shall be present on-site during construction activities in the vicinity of the dens to ensure that the buffer is adequate to avoid direct impact to individuals or natal/reproductive den abandonment. The monitor shall be required to be present until it is determined that the young are of an independent age and construction activities would not harm individual San Joaquin kit fox. A written summary of the survey results shall be submitted to the City of Antioch Community Development Department.

- b,c. According to the Technical Biological Report, jurisdictional waters of the U.S. and State under jurisdiction of the USACE, the Regional Water Quality Control Board (RWQCB), and the CDFW are present on-site in the form of Sand Creek and the creek's unnamed tributary, which occur in the northern and western portions of the site, respectively. In addition, a small riparian woodland is present along the southern bank of both channels near the site's northern boundary, as previously described.

As currently proposed, the project would predominantly avoid impacts to the channels and associated riparian habitat as the habitats would be preserved within designated open space areas. However, an EVA road is proposed to connect to Deer Valley Road from the western portion of the site, crossing Sand Creek's unnamed channel. The proposed EVA road would follow the alignment of an existing unimproved private access road that currently crosses the tributary to Sand Creek in the western portion of the site. A culvert

currently exists under the unimproved private road. Substantial grading is not proposed or anticipated to be required for placement of the EVA. The EVA road would be used by emergency vehicles only during an emergency situation, and would not be available for use by the general public. Nonetheless, depending on the design of the EVA road, construction of the EVA could result in temporary or minor permanent impacts to the channel. Therefore, construction of the EVA road through the channel could result in a significant impact to jurisdiction waters, which would require permits from applicable regulatory agencies. In addition, a new outfall into the unnamed channel is proposed associated with the proposed bio-swale within Parcel X for stormwater collected from the EVA road. A formal wetland delineation would be required to be prepared and submitted to the USACE for a Jurisdictional Determination to determine the extent of the jurisdictional status of the channel. Thus, construction of the proposed storm drainage infrastructure into the channel could result in a potentially significant impact to jurisdictional waters.

Should the Creekside/Vineyards at Sand Creek Project not be developed, an alternative access roadway may be constructed that would connect the northern portion of the site to the future Sand Creek Road, following the eastern boundary of the CCCFCD property and Basin and crossing Sand Creek. The optional roadway was included as part of the Aviano Project and has been analyzed within the associated EIR. Accordingly, should the alternative access roadway be constructed as part of the proposed project, the project applicant would be required to comply with all applicable mitigation measures related to the roadway set forth in the EIR prepared for the Aviano Project.

In addition to the channels, a fairly extensive wetland complex is present at the lower elevations of the eastern portion of the site in an area proposed for development. Three potential wetlands also occur outside of the wetland complex (see Figure 11). The wetlands appear to be isolated from other waters of the U.S. and, therefore, may not be considered jurisdictional by the USACE. However, the wetlands would likely be considered jurisdictional by the RWQCB.

Considering the above, the proposed project may result in fill or other disturbance of waters of the U.S. and/or the State. Therefore, the proposed project could have a substantial adverse effect on riparian habitat, sensitive natural communities, or State or federally protected wetlands, and a **potentially significant** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

- IV-12(a). *Prior to the initiation of ground-disturbing activities, the project applicant shall submit a formal wetland delineation to the USACE for verification to determine the extent of all hydrological features, their jurisdictional status, and the extent of any impacts of the currently proposed project. A summary of the wetland delineation shall be submitted to the City of Antioch Community Development Department.*
- IV-12(b). *Prior to discharging any dredged or fill materials into any waters of the U.S. within the project site and/or the off-site improvement areas, the applicant shall obtain permit authorization to fill wetlands under Section 404 of the federal Clean Water Act (CWA) (Section 404 Permit) from USACE. The Section 404 Permit application shall include an assessment of directly*

impacted, avoided, and preserved acreages to waters of the U.S. Mitigation measures shall be developed as part of the Section 404 Permit to ensure no net loss of wetland function and values. Mitigation for direct impacts to waters of the U.S. within the project site and/or the off-site improvement areas would occur at a minimum of 1:1 ratio for direct impacts by purchasing seasonal wetland credits from the Cosumnes Mitigation Bank or other wetland mitigation bank that services the project site, as approved by the USACE and the RWQCB.

Alternatively, the project applicant may create, preserve, and manage new seasonal wetlands on or off of the project site that is of equal or greater quality to the habitats being impacted at a minimum 1:1 mitigation ratio. A project-specific Wetland Mitigation and Monitoring Plan prepared by a qualified wetland restoration ecologist that includes the following information shall be provided to the City of Antioch Community Development Department prior to conducting any activity that would result in the placement of any fill material into a water of the U.S. or water of the State:

- *A description of the impacted water;*
- *A map depicting the location of the mitigation site(s) and a description of existing site conditions;*
- *A detailed description of the mitigation design that includes: (i) the location of the new seasonal wetlands; (ii) proposed construction schedule; (iii) a planting/vegetation plan; (iv) specific monitoring metrics, and objective performance and success criteria, such as delineation of created area as jurisdictional waters using USACE published methods; and (v) contingency measures if the created wetlands do not achieve the specified success criteria; and*
- *Short-term and long-term management and monitoring methods.*

If the wetland mitigation site is a separate mitigation property, the project applicant will grant a conservation easement to a qualified entity, as defined by Section 81.5.3 of the California Civil Code, preserving the created seasonal wetland(s) in perpetuity, and establish an endowment fund to provide for the long-term management, maintenance, and monitoring of the created seasonal wetland(s). If the proposed project includes placing fill material into jurisdictional waters of the U.S. or waters of the State, the project applicant shall provide the City of Antioch Community Development Department with a copy of permits issued by the USACE and RWQCB authorizing the fill.

In addition, a Water Quality Certification or waiver pursuant to Section 401 of the CWA must be obtained for Section 404 permit actions. Proof of compliance with the mitigation measure shall be submitted to the City of Antioch Community Development Department prior to the issuance of grading permits.

IV-12(c). *Impacts to riparian habitat within CDFW's Section 1602 jurisdictional areas that would occur during construction shall be mitigated through planting*

California native trees and/or shrubs within the Sand Creek buffer area. Impacted trees and shrubs shall be mitigated with a 3:1 (replacement:impacts) ratio. Replacement trees and shrubs shall be a minimum of one gallon size trees/shrub replacements.

In addition, the project applicant will implement appropriate BMPs to prevent construction related impacts that could introduce de minimus fill or other pollutants into Sand Creek and the creek's tributaries. The measures shall include the installation of wildlife-friendly hay wattles and/or silt fence that will prevent unintended de minimus fill impacts during construction activities associated with Sand Creek. In addition, orange silt fencing shall be installed at the top-of-bank of Sand Creek to prevent unintended human and equipment traffic adjacent to Sand Creek. Finally, the dripline of all protected trees within the drainages on the project site, if near work areas, shall be protected through the installation of orange construction fencing.

The project applicant shall satisfy this mitigation by providing the City of Antioch Community Development Department with a fully executed copy of a Streambed Alteration Agreement (SBAA) with the CDFW that includes these, or other functionally equivalent, BMPs, prior to any construction activities associated with Sand Creek. The project applicant shall implement the conditions of the executed SBAA.

- d. Per the Technical Biological Report, the project site is not expected to act as a movement corridor. Buildout of the site would not constrain native wildlife movement, as the surrounding area is approved for buildout of single-family residential subdivisions. Most wildlife in the area would use the adjacent Sand Creek and associated tributary as a local movement corridor and would likely continue to do so in the same manner after site development. As noted above, the majority of Sand Creek and its channel would remain undisturbed in designated open spaces. As such, the project would not interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites. Thus, a **less-than-significant** impact would occur.

- e. According to the City's Tree Preservation and Regulation Ordinance (Section 9-5.1205), tree removal for the proposed project is evaluated as part of the "regular development application process." In deciding whether to approve the removal of a tree, or require its preservation, the City considers whether the tree being evaluated is considered a landmark, indigenous, mature, or established tree. In addition, the City would evaluate the tree's appearance, species type, and aesthetic compatibility with the proposed project. The City of Antioch's Tree Preservation and Regulation Ordinance defines six categories of trees:
 - 1. An established tree is any tree that is at least ten inches in diameter, at diameter at breast height (DBH). DBH is measured 4.5 feet above natural or finished grade.
 - 2. An indigenous tree is a naturally growing tree of the following species: Blue Oak (*Quercus douglasii*), Valley Oak (*Quercus lobata*), Coast Live Oak (*Quercus agrifolia*), Canyon Live Oak (*Quercus chrysolepis*), Interior Live Oak (*Quercus wislizenii*), California Buckeye (*Aesculus californica*), and California Bay (*Umbellularia californica*)

3. A landmark tree is any tree that is at least 48 inches DBH and/or is over 40 feet in height.
4. A mature tree is any tree which is at least 26 inches DBH.
5. A street tree is any tree planted within a public right-of-way and/or a tree planting easement.
6. A protected tree is any tree required to be preserved as a condition of an approval from a regular development application.

The City's Tree Preservation and Regulation Ordinance requires two 24-inch box trees to replace the removal of each established tree, two 48-inch box trees for removal of each mature tree, and the City Council has discretion in determining the appropriate ratio of box tree replacement for the removal of any landmark or indigenous trees.

A tree inventory has not yet been conducted by a qualified arborist for the project site. However, trees exist on-site which may require a permit for removal. Should the project applicant fail to comply with the requirements noted above, the proposed project could conflict with local policies or ordinances protecting biological resources, including Section 9-5.1205 of the City's Municipal Code, and a **potentially significant** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

IV-13. Prior to issuance of certificates of occupancy, all trees that are legally removed as part of the proposed project shall be replaced according to the following schedule, to the satisfaction of the City of Antioch Community Development Department:

- 1. Each established tree: two 24-inch box trees.*
- 2. Each mature tree: two 48-inch box trees.*

The locations and sizes of the replacement trees shall be clearly shown on the final landscape plans, subject to review and approval by the City of Antioch Community Development Department.

- f. As noted previously, in July 2007, the ECCC HCP/NCCP was adopted by Contra Costa County, other member cities, the USFWS, and the CDFW. The City of Antioch, however, declined to participate in the HCP/NCCP. While the City is currently considering drafting a new HCP/NCCP, the document has not yet been finalized or adopted. Therefore, the project site is not located in an area with an approved HCP/NCCP, or local, regional, or State habitat conservation plan. As a result, **no impact** would occur regarding a conflict with the provisions of such a plan.

V. CULTURAL RESOURCES.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Disturb any human remains, including those interred outside of dedicated cemeteries.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

The following discussion is based on a Cultural and Paleontological Resources Inventory prepared for the proposed project by Natural Investigations Company.⁶

- a-c. The Cultural and Paleontological Resources Inventory included archival research at the Northwest Information Center (NWIC), examination of historical maps, aerial photographs, and the federal land patent records maintained by the Bureau of Land Management, a search of the Native American Heritage Commission (NAHC) Sacred Lands File, and field inspection of the proposed project site. During the field survey, all visible ground surfaces within the project area were carefully examined for cultural materials (e.g., flaked stone tools, tool-making debris, stone milting tools, or-fire affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions and features indicative of the former presence of structures or buildings, or historic-era debris.

Historical resources are features that are associated with the lives of historically important persons and/or historically significant events, that embody the distinctive characteristics of a type, period, region or method of construction, or that have yielded, or may be likely to yield, information important to the pre-history or history of the local area, California, or the nation. Examples of typical historical resources include, but are not limited to, buildings, farmsteads, rail lines, bridges, and trash scatters containing objects such as colored glass and ceramics.

Per the Cultural and Paleontological Resources Inventory, two historic-era resources have been previously mapped within the project area: the Shannon/Williamson Ranch and the Contra Costa-Las Positas Transmission Line. The Shannon/Williamson Ranch has contributing features listed under the National Register of Historic Places (NRHP)/California Register of Historical Resources (CRHR). However, the contributing features and artifacts associated with the Shannon/Williamson ranch are not present within the project area. All contributing features from the Shannon/Williamson Ranch are preserved in a fenced, approximately four-acre area at 4900 Lone Tree Way, approximately 1.25 miles north of the project area. The steel lattice towers and other features/artifacts associated with the overhead Contra Costa-Las Positas Transmission Line were found not eligible for NRHP or CRHR listing, are not present with the project area. Therefore, known historic resources do not exist on-site or in the off-site alternative roadway area, and implementation of the proposed project would not adversely affect any such resources.

⁶ Natural Investigations Company. *Cultural and Paleontological Resources Inventory for the Albers Ranch Project, City of Antioch, Contra Costa County California.* May 25, 2021.

Based on the results of the records search, review of archival maps and photographs, Native American settlement patterns, geoarchaeological study, site specific variables, field survey, and assessment of direct or indirect project impacts, the potential for the discovery of buried archaeological materials within the project area, including the off-site improvements area, is considered to be low. In addition, prehistoric or ethnohistoric resources were not documented within the project site.

However, previously unknown cultural or archaeological resources, including human remains, have the potential to be uncovered during ground-disturbing construction and excavation activities at the project site. If previously unknown resources are encountered during construction activities, the proposed project could cause a substantial adverse change in the significance of a unique archaeological resource pursuant to CEQA Guidelines Section 15064.5 and/or disturb human remains, including those interred outside of dedicated cemeteries, during construction. Therefore, impacts could be considered **potentially significant**.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

V-1. *In the event that a cultural resource is inadvertently discovered during project activities, work shall be halted within 100 feet (30 meters) of the find and a qualified archaeologist (36 CFR Part 61) notified immediately so that an assessment of potential significance can be undertaken in accordance with City of Antioch General Plan Policy 10.9.2.d (2003). Construction activities may continue in other areas, but shall not resume in the area of the find until the City of Antioch Community Development Department provides written permission.*

If the discovery proves to be significant, additional work, such as data recovery excavation, may be warranted and would be discussed in consultation with the City of Antioch Community Development Department, any invested tribes, and other relevant regulatory agencies, as appropriate.

V-2. *In the event of the accidental discovery or recognition of any or human remains, further excavation or disturbance of the find or any nearby area reasonably suspected to overlie adjacent human remains shall not occur until compliance with the provisions of CEQA Guidelines Section 15064.5(e)(1) and (2) has occurred. The Guidelines specify that in the event of the discovery of human remains other than in a dedicated cemetery, no further excavation at the site or any nearby area suspected to contain human remains shall occur until the County Coroner has been notified to determine if an investigation into the cause of death is required. If the coroner determines that the remains are Native American, then, within 24 hours, the Coroner must notify the Native American Heritage Commission, which in turn will notify the most likely descendants who may recommend treatment of the remains and any grave goods. If the Native American Heritage Commission is unable to identify a most likely descendant or most likely descendant fails to make a recommendation within 48 hours after notification by the Native American Heritage Commission, or the landowner or his authorized agent rejects the*

recommendation by the most likely descendant and mediation by the Native American Heritage Commission fails to provide a measure acceptable to the landowner, then the landowner or his authorized representative shall rebury the human remains and grave goods with appropriate dignity at a location on the property not subject to further disturbances. Should human remains be encountered, a copy of the resulting County Coroner report noting any written consultation with the Native American Heritage Commission shall be submitted as proof of compliance to the City's Community Development Department.

VI. ENERGY.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

a,b. The main forms of available energy supply are electricity, natural gas, and oil. A description of the 2019 California Green Building Standards Code and the Building Energy Efficiency Standards, with which the proposed project would be required to comply, as well as discussions regarding the proposed project’s potential effects related to energy demand during construction and operations are provided below.

California Green Building Standards Code

The 2019 California Green Building Standards Code, otherwise known as the CALGreen Code (CCR Title 24, Part 11), is a portion of the California CBSC, which became effective with the rest of the California Building Standards Code (CBSC) on January 1, 2020. The purpose of the CAL Green Code is to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices. The CALGreen standards regulate the method of use, properties, performance, types of materials used in construction, alteration repair, improvement and rehabilitation of a structure or improvement to property. The provisions of the code apply to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure throughout California. Requirements of the CALGreen Code include, but are not limited to, the following measures:

- Compliance with relevant regulations related to future installation of Electric Vehicle charging infrastructure in residential and non-residential structures;
- Indoor water use consumption is reduced through the establishment of maximum fixture water use rates;
- Outdoor landscaping must comply with the California Department of Water Resources’ Model Water Efficient Landscape Ordinance (MWELO), or a local ordinance, whichever is more stringent, to reduce outdoor water use;
- Diversion of 65 percent of construction and demolition waste from landfills; and
- Mandatory use of low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particle board.

Building Energy Efficiency Standards

The 2019 Building Energy Efficiency Standards is a portion of the CBSC, which expands upon energy efficiency measures from the 2016 Building Energy Efficiency Standards resulting in a seven percent reduction in energy consumption from the 2016 standards for residential structures. Energy reductions relative to previous Building Energy Efficiency Standards would be achieved through various regulations including requirements for the use of high efficacy lighting, improved water heating system efficiency, and high-performance attics and walls.

One of the improvements included within the 2019 Building Energy Efficiency Standards is the requirement that certain residential developments, including some single-family and low-rise residential developments, include on-site solar energy systems capable of producing 100 percent of the electricity demanded by the residences. Certain residential developments, including developments that are subject to substantial shading, rendering the use of on-site solar photovoltaic systems infeasible, are exempted from the foregoing requirement; however, such developments are subject to all other applicable portions of the 2019 Building Energy Efficiency Standards. Once rooftop solar electricity generation is factored in, homes built under the 2019 standards will use approximately 53 percent less energy than those under the 2016 standards.

Construction Energy Use

Construction of the proposed project would involve on-site energy demand and consumption related to use of oil in the form of gasoline and diesel fuel for construction worker vehicle trips, hauling and materials delivery truck trips, and operation of off-road construction equipment. In addition, diesel-fueled portable generators may be necessary to provide additional electricity demands for temporary on-site lighting, welding, and for supplying energy to areas of the sites where energy supply cannot be met via a hookup to the existing electricity grid. Project construction would not involve the use of natural gas appliances or equipment.

Even during the most intense period of construction, due to the different types of construction activities (e.g., site preparation, grading, building construction), only portions of the project site would be disturbed at a time, with operation of construction equipment occurring at different locations on the project site, rather than a single location. In addition, all construction equipment and operation thereof would be regulated per the California Air Resources Board (CARB) In-Use Off-Road Diesel Vehicle Regulation, which is intended to reduce emissions from in-use, off-road, heavy-duty diesel vehicles in California by imposing limits on idling, requiring all vehicles to be reported to CARB, restricting the addition of older vehicles into fleets, and requiring fleets to reduce emissions by retiring, replacing, or repowering older engines, or installing exhaust retrofits. The In-Use Off-Road Diesel Vehicle Regulation would subsequently help to improve fuel efficiency and reduce GHG emissions. Technological innovations and more stringent standards are being researched, such as multi-function equipment, hybrid equipment, or other design changes, which could help to reduce demand on oil and emissions associated with construction.

The CARB has prepared the *2017 Climate Change Scoping Plan Update* (2017 Scoping Plan),⁷ which builds upon previous efforts to reduce greenhouse gas (GHG) emissions and is designed to continue to shift the California economy away from dependence on fossil fuels. Appendix B of the 2017 Scoping Plan includes examples of local actions (municipal code changes, zoning changes, policy directions, and mitigation measures) that would support the State's climate goals. The examples provided include, but are not limited to, enforcing idling time restrictions for construction vehicles, utilizing existing grid power for electric energy rather than operating temporary gasoline/diesel-powered generators, and increasing use of electric and renewable fuel-powered construction equipment. The In-Use Off-Road Diesel Vehicle Regulation described above, with which the proposed project must comply, would be consistent with the intention of the 2017 Scoping Plan and the recommended actions included in Appendix B of the 2017 Scoping Plan.

⁷ California Air Resources Board. *The 2017 Climate Change Scoping Plan Update*. November 2017.

Based on the above, the temporary increase in energy use occurring during construction of the proposed project would not result in a significant increase in peak or base demands or require additional capacity from local or regional energy supplies. In addition, the proposed project would be required to comply with all applicable regulations related to energy conservation and fuel efficiency, which would help to reduce the temporary increase in demand.

Operational Energy Use

Following implementation of the proposed project, PG&E would provide electricity and natural gas to the project site. Energy use associated with operation of the proposed project would be typical of residential uses, requiring electricity and natural gas for interior and exterior building lighting, heating, ventilation, and air conditioning (HVAC), electronic equipment, machinery, refrigeration, appliances, security systems, and more. Maintenance activities during operations, such as landscape maintenance, would involve the use of electric or gas-powered equipment. In addition to on-site energy use, the proposed project would result in transportation energy use associated with vehicle trips generated by the proposed residential development.

The proposed project would be subject to all relevant provisions of the CBSC, including the Building Energy Efficiency Standards and CALGreen Code. Adherence to the CALGreen Code and the Building Energy Efficiency Standards would ensure that the proposed structures would consume energy efficiently. For example, consistent with the 2019 Building Energy Efficiency Standards requirement that residential developments include on-site solar energy systems, the proposed buildings would be equipped with rooftop solar panels, which would provide on-site renewable energy to meet the project's electricity demand. Thus, required compliance with the CBSC would ensure that the building energy use associated with the proposed project would not be wasteful, inefficient, or unnecessary.

With regard to transportation energy use, the proposed project would comply with all applicable regulations associated with vehicle efficiency and fuel economy, such as the Corporate Average Fuel Economy (CAFE) Standards and Pavley. Issues related to vehicle miles travelled (VMT) and access to public transit, bicycle, and pedestrian facilities will be addressed in the Transportation chapter of the Albers Ranch EIR being prepared for the project.

Conclusion

Based on the above, construction and operation of the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Thus, a ***less-than-significant*** impact would occur.

VII. GEOLOGY AND SOILS.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii. Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv. Landslides?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

The following discussion is based on a Preliminary Geotechnical Exploration for the project site prepared by ENGEO Incorporated (ENGEO) (see Appendix B).⁸

ai-ii. According to the Preliminary Geotechnical Exploration, the project site and off-site improvement area is not located within an Alquist-Priolo Earthquake Fault Zone. However, seismicity at the proposed project site is influenced by the Great Valley fault. The Great Valley fault is considered capable of causing the highest ground shaking at the site. In addition, the nearest strike-slip fault zoned active by the State of California Geological Survey is the Greenville Fault, located approximately 5.6 miles to the southwest. Because known active faults do not extend through the project site, the potential for surface rupture due to faulting occurring beneath the site during the design life of the proposed development would be low.

Due to the site’s proximity to active faults, the potential exists for the proposed single-family residential subdivision to be subject to seismic ground shaking. However, the proposed buildings would be properly engineered in accordance with the CBSC, which includes engineering standards appropriate for the seismic area in which the project site is located. Structures built consistent with the CBSC should be able to: (1) resist minor earthquakes without damage, (2) resist moderate earthquakes without structural damage but with some nonstructural damage, and (3) resist major earthquakes without collapse

⁸ ENGEO Incorporated. *Preliminary Geotechnical Exploration Sullenger Ranch, Antioch, CA.* June 29, 2005.

but with some structural as well as nonstructural damage. Conformance with the design standards is enforced through building plan review and approval by the City of Antioch Building Division prior to the issuance of building permits. Proper engineering of the proposed project would ensure that seismic-related effects would not cause adverse impacts. Therefore, a **less-than-significant** impact would occur related to seismic surface rupture and strong seismic ground shaking.

a,iii,aiv,
c,d.

The proposed project's potential effects related to liquefaction, landslides, lateral spreading, subsidence/settlement, and expansive soils are discussed in detail below.

Liquefaction

Soil liquefaction results from loss of strength during cyclic loading, such as imposed by earthquakes. Soils most susceptible to liquefaction are clean, loose, saturated, uniformly graded fine sands below the groundwater table. Empirical evidence indicates that loose silty sands are also potentially liquefiable. When seismic ground shaking occurs, the soil is subjected to cyclic shear stresses that can cause excess hydrostatic pressures to develop. If excess hydrostatic pressures exceed the effective confining stress from the overlying soil, the sand may undergo deformation. If the sand undergoes virtually unlimited deformation without developing significant resistance, the sand is said to have liquefied, and if the sand consolidates or vents to the surface during and following liquefaction, ground settlement and surface deformation may occur.

The soil borings conducted as part of the Preliminary Geotechnical Exploration consisted primarily of silty clays, claystone, and sandstone. Groundwater was encountered at depths of 13 feet below surface. Based on the field exploratory data and estimated density and soil gradation, ENGEO determined that the potential for liquefaction to occur at the site is low.

Landslides

Seismically-induced landslides are triggered by earthquake ground shaking. The risk of landslide hazard is greatest in areas with steep, unstable slopes. Landslides are a primarily geotechnical consideration for most of the East Bay Hills.

Landslide deposits identified by ENGEO were mapped using stereo-paired aerial photographs, and field checked during site reconnaissance and field explorations. During the field reconnaissance, ENGEO encountered profiles of stiff to very stiff silty clays overlying sandstone and claystone bedrock in the test pits excavated in possible landslide areas. With the exception of isolated areas along Sand Creek, ENGEO did not identify hummocky, uneven terrain characteristic of landslide deposits across the majority of the site. ENGEO concludes that the features initially suspected of landslides are more likely colluvial material. Therefore, the potential for landslides to occur at the site is low.

Lateral Spreading

Lateral spreading is a failure within a nearly horizontal soil zone (possibly due to liquefaction) which causes the overlying soil mass to move toward a free face or down a gentle slope. As described above, the liquefaction potential for subsurface soils is considered to be low. Therefore, ENGEO determined that the potential for lateral spreading to occur at the site during seismic shaking is also considered low due to the lack of potentially liquefiable soils.

Subsidence/Settlement

Subsidence is the settlement of soils of very low density generally from either oxidation of organic material, or desiccation and shrinkage, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. As discussed above, on-site soils are generally not considered to be subject to substantial liquefaction risks. In addition, loose granular soils located were not identified deeper than two feet below the ground surface, and the upper two feet of the site would be re-worked as engineered fill. Because the site presents low potential for liquefaction, the potential for seismically induced settlement to occur at the project site is also considered to be low.

Expansive Soils

Expansive soils shrink and swell as a result of moisture changes, which can cause heaving and cracking of slabs-on-grade, pavements, and structures founded on shallow foundations. Building damage due to moisture changes in expansive soils can be reduced by appropriate grading practices and using post-tensioned slab foundations or similarly stiffened foundation systems, which are designed to resist the deflections associated with soil expansion.

Based on the results of on-site soil boring investigations conducted as part of the Preliminary Geotechnical Exploration, the soils encountered across the site consisted of plastic silty clay deposits. Plastic silty clay deposits can be expected to display a high expansion potential. Compliance with the design recommendations included in the Preliminary Geotechnical Exploration would be necessary to ensure that hazards related to expansive soils do not occur.

Off-site Improvement Area

Should the Creekside/Vineyards at Sand Creek Project not be developed, an alternative access roadway may be constructed as part of the proposed project. The alternative roadway would connect the northern portion of the site to the future Sand Creek Road, following the eastern boundary of the CCCFCD property and Basin and crossing Sand Creek. The optional roadway was included as part of the Aviano Project and has been analyzed within the associated EIR. Accordingly, should the alternative access roadway be constructed as part of the proposed project, the project applicant would be required to comply with all applicable mitigation measures related to the roadway set forth in the EIR prepared for the Aviano Project.

Conclusion

Based on the above discussion, without incorporation of site-specific design considerations, the proposed project could be subject to risks related to being located on highly expansive soils. Thus, a ***potentially significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

- VII-1. *All grading and foundation plans for the development shall be designed by a Civil and Structural Engineer and reviewed and approved by the City of Antioch Building Division prior to issuance of grading and building permits to ensure that all geotechnical recommendations specified in the*

Preliminary Geotechnical Exploration prepared for the proposed project are properly incorporated and utilized in the project design.

VII-2. *Prior to issuance of any grading permits, the project applicant shall submit to the City of Antioch Engineering Department, for review and approval, a design-level geotechnical exploration study produced by a California Registered Civil Engineer or Geotechnical Engineer and identify grading and building practices necessary to achieve compliance with the latest adopted edition of the California Building Standards Code's geologic, soils, and seismic requirements. Consistent with the Preliminary Geotechnical Exploration prepared for the proposed project, the design-level geotechnical exploration study shall include additional soil borings, test pits, laboratory testing, chemical testing for corrosivity, geologic mapping and fault trenching/evaluation.*

- b. During grading activities associated with development of the proposed project, and prior to overlaying of the ground with impervious surfaces and landscaping elements, topsoil would temporarily be exposed. Thus, the potential exists for wind and water to erode portions of the exposed topsoil during construction, which could adversely affect downstream storm drainage facilities. Impacts related to substantial soil erosion or the loss of topsoil during construction of the proposed project would be **potentially significant**.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

VII-3. *Prior to issuance of grading and building permits, the project applicant shall submit, for the review and approval by the City Engineer, an erosion control plan that utilizes standard construction practices to limit the erosion effects during construction of the proposed project. Measures shall include, but are not limited to, the following:*

- *Hydro-seeding;*
 - *Placement of erosion control measures within drainage ways and ahead of drop inlets;*
 - *The temporary lining (during construction activities) of drop inlets with "filter fabric" (a specific type of geotextile fabric);*
 - *The placement of straw wattles along slope contours;*
 - *Directing subcontractors to a single designation "wash-out" location (as opposed to allowing them to wash-out in any location they desire);*
 - *The use of siltation fences; and*
 - *The use of sediment basins and dust palliatives.*
- e. The proposed project would connect to a sewer line within the Creekside/Vineyards at Sand Creek Project planned for construction to the east of the project site. The construction or operation of septic tanks or other alternative wastewater disposal systems is not included as part of the proposed project. Therefore, **no impact** regarding the

capability of soil to adequately support the use of septic tanks or alternative wastewater disposal systems would occur.

- f. Per the City of Antioch General Plan, numerous fossils have been collected from the Antioch Planning Area. A fossil locality search at the California Academy of Sciences, Golden Gate Park identified marine pelecypod and gastropod fossils collected from almost all of the sedimentary formations located in the City. Literature review indicated that all of the formations north of Mt. Diablo contain fossils. At least eight fossil localities occur within, or immediately adjacent to, the City's Planning Area, and another five are located within a one-mile radius of the Planning Area. Fossils in the Planning Area identified by the California Museum of Paleontology, UC Berkeley include mammoths, primitive horses, bison, rats, beaver-type creatures, and sloths.

According to the Cultural and Paleontological Resources Inventory prepared for the proposed project, the valley between the two hills and the western extent of the project area is underlain by surficial Holocene-age alluvium.⁹ Holocene-age deposits are typically considered to have a low paleontological potential because the deposits are geologically immature and are unlikely to have fossilized the remains of organisms, particularly deposits less than 6,000 years old. In contrast, deposits of older Pleistocene alluvium mapped in the greater Antioch vicinity have produced a number of vertebrate fossils. While fossil localities are not known to directly underlie the project area, the sediments in the greater project vicinity have yielded vertebrate remains that are considered important paleontological resources for CEQA purposes. As a result, the potential exists that ground-disturbing activities associated with the proposed project could inadvertently destroy, directly or indirectly, unique paleontological resources or sites.

The project site and off-site improvements area do not contain any unique geologic features. However, based on the above, paleontological resources could exist within the project area. Should previously unknown paleontological resources exist within the project area, ground-disturbing activity, such as grading, trenching or excavating, associated with implementation of the proposed project would have the potential to disturb or destroy such features. Therefore, the proposed project could result in the direct or indirect destruction of a unique paleontological resource, and a **potentially significant** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

- VII-4. *Prior to the initiation of ground-disturbing activities, a qualified paleontologist shall be retained to administer Worker Environmental Awareness Program (WEAP) training to construction personnel so that a basic understanding of local geology and the paleontological sensitivity of the project area will be acquired by those involved in earth-moving activities. The training shall include information on the types of fossils that may be encountered during project work, relevant compliance requirements, and the course to action to be taken in the event of an inadvertent fossil discovery. A sign-in sheet shall be kept with the*

⁹ Natural Investigations Company. *Cultural and Paleontological Resources Inventory for the Albers Ranch Project, City of Antioch, Contra Costa County California*. May 25, 2021.

signatures of all attendees for submission to the City of Antioch Community Development Department.

VII-5. In the event that a paleontological resource is inadvertently discovered during project-related work, regardless of the depth of excavation or location, work shall be halted within 50 feet (15 meters) of the find and a qualified paleontologist (Society of Vertebrate Paleontology [SVP] 2010) notified immediately so that an assessment of the resource's potential significance can be undertaken in accordance with City of Antioch General Plan Policy 10.9.2.d (City 2003). Construction activities could continue in other areas.

If the find is determined to be significant under SVP criteria, the find shall be left in place without further disturbance, or if avoidance is not feasible, then additional work, such as fossil recovery excavation (salvage) and curation at a certified repository, such as the University of California Museum of Paleontology (UCMP), may be warranted and would be discussed in consultation with the City of Antioch Community Development Department, and any other relevant regulatory agency, as appropriate.

VIII. GREENHOUSE GAS EMISSIONS.

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	✘	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gasses?	✘	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

a,b. Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on earth. An individual project's GHG emissions are at a micro-scale level relative to global emissions and effects to global climate change; however, an individual project could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact. As such, impacts related to emissions of GHG are inherently considered cumulative impacts.

Estimated GHG emissions attributable to future development would be primarily associated with increases of carbon dioxide (CO₂) and, to a lesser extent, other GHG pollutants, such as methane (CH₄) and nitrous oxide (N₂O) associated with area sources, mobile sources or vehicles, utilities (electricity and natural gas), water usage, wastewater generation, and the generation of solid waste. The primary source of GHG emissions for the project would be expected to be mobile source emissions. The common unit of measurement for GHG is expressed in terms of annual metric tons of CO₂ equivalents (MTCO₂e/yr).

Buildout of the proposed project would contribute to increases of GHG emissions that are associated with global climate change during construction and operations of the proposed project. As such, the proposed project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Therefore, impacts related to GHG emissions and global climate change could be cumulatively considerable and considered **potentially significant**.

Further analysis of this impact will be discussed in the Air Quality and Greenhouse Gas Emissions chapter of the Albers Ranch EIR being prepared for the project

IX. HAZARDS AND HAZARDOUS MATERIALS.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Expose people or structures, either directly or indirectly, to the risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

- a. Residential land uses, including uses associated with the future assisted living facility, and commercial land uses, are not typically associated with the routine transport, use, disposal, or generation of substantial amounts of hazardous materials. Future residents may use common household cleaning products, fertilizers, and herbicides on-site, any of which could contain potentially hazardous chemicals; however, such products would be expected to be used in accordance with label instructions. Due to the regulations governing use of such products and the amount utilized on the site, routine use of such products would not represent a substantial risk to public health or the environment. Therefore, the project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, and a **less-than-significant** impact would occur.
- b. The following discussion provides an analysis of potential hazards and hazardous materials associated with upset or accident conditions related to the proposed construction activities and existing on-site conditions.

Construction Activities

Construction activities associated with the proposed project would involve the use of heavy equipment, which would contain fuels and oils, and various other products such as concrete, paints, and adhesives. Small quantities of potentially toxic substances (e.g., petroleum and other chemicals used to operate and maintain construction equipment) would be used at the project site and transported to and from the site during construction. However, the project contractor would be required to comply with all California Health and

Safety Codes and local City ordinances regulating the handling, storage, and transportation of hazardous and toxic materials. Compliance with such regulations would ensure that a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions during construction would not occur.

Existing On-Site Hazardous Materials

A Phase I Environmental Site Assessment (ESA) was prepared for the project site by ENGEO for the purpose of identifying potential recognized environmental conditions (RECs) associated with the project site (see Appendix C).¹⁰ The Phase I ESA included a survey of the site and a review of historical documentation, aerial photography, regulatory agency files, and environmental site radius reports.

Currently, the project site consists of undeveloped and hilly land used as dry farmland, with a reach of Sand Creek within the western portion of the project site. Historical sources reviewed as part of the Phase I ESA indicate that the site was an undeveloped hilly area from at least 1912 to 1980. The site has been historically used as cattle-grazing land.

Per the Phase I ESA, features such as stressed vegetation, septic systems, water wells, above-ground storage tanks (ASTs), and underground storage tanks (USTs) were not identified on the site. In addition, the project site does not contain existing structures, thereby eliminating any risks related to exposure to asbestos or lead-based paints. Based on a review of environmental record sources regarding the project site and nearby properties, the project site is not located within the vicinity of any pre-existing off-site hazards that could pose risk to the proposed development.

Two petroleum pipelines owned by Conoco Phillips and Chevron run through the southwest corner of the project site and are visible as they cross Sand Creek. Although visible signs of leakage were not identified associated with the pipelines, ENGEO considers the pipelines to be a potential REC due to the potential for impairing surrounding soils.

Conclusion

Because construction activities would be required to adhere to all relevant guidelines and ordinances regulating the handling, storage, and transportation of hazardous materials, significant hazards would not occur during construction. In addition, based on the results of the Phase I ESA, existing hazardous materials, including contaminated soils, are not anticipated to occur on the project site. Nonetheless, the potential exists for ground-disturbing activities associated with proposed project to encounter the two petroleum pipelines located in the southwest corner of the site. Therefore, implementation of the proposed project could create a significant hazard to the public or the environment through reasonably foreseeable upset and accidental conditions involving the release of hazardous materials into the environment, and a **potentially significant** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

¹⁰ ENGEO Incorporated. *Phase One Environmental Site Assessment Sullenger Ranch Antioch, California*. June 29, 2005.

IX-1. *Prior to final map approval, the project applicant shall submit to the City of Antioch Engineering Department, for review and approval, plans which show that future inhabited structures will not be located over or within the required setback from any active petroleum pipelines in compliance with the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) Construction Site Review Program.*

IX-2. *Prior to issuance of any grading permits, the project applicant shall coordinate with Conoco Phillips and Chevron to determine the accurate depths and alignment of the existing on-site pipelines and shall conduct field checking and potholing of the pipelines, if necessary. Arrangements for potholing of the pipelines shall be made at least 48 hours in advance. The project applicant shall be responsible for providing a backhoe and operator, as well as a surveyor if needed. All construction plans that involve pipeline easement encroachments shall be submitted to the applicable pipeline owner to allow for review.*

After determining the accurate depths and alignments of the existing pipelines, the results shall be noted on all project construction plans, subject to review by the City Engineer. For any work occurring within the pipeline easement, construction plans shall demonstrate compliance with applicable local, State, and federal regulations and development restrictions, which would include, but would not be limited to, the following:

- *Maintain a minimum of 12 inches of clearance between the pipelines and other cross-lines that intersect at a 90-degree angle, or a minimum of 24 inches of clearance for intersection angles less than 90-degrees;*
- *Maintain a minimum of 24 inches of undisturbed clearance between the top of pipe and bottom of the sub grade for paving and grass or shallow rooted plants within the pipeline easements;*
- *Prohibit deep-rooted trees and structures within pipeline easements;*
- *All excavations within 24-inches of the pipelines shall be accomplished using hand tools only;*
- *Restrict use of heavy vibratory equipment over pipelines; and*
- *Notify Underground Service Alert (USA) at 800-227-2600 at least 48 hours prior to any excavation work.*

c. The project site is not located within a quarter mile of any existing or proposed schools. The nearest school is Dozier-Libbey Medical High School, located approximately 0.44-mile north of the site. While the Antioch Unified School District owns the parcel located immediately to the northwest of the site (APN 057-042-005), the City has not received an application for development of the property. Furthermore, as discussed above, implementation of Mitigation Measures IX-1 and IX-2 would ensure that hazardous materials would not be emitted during construction or operation of the proposed project. Therefore, the proposed project would have **no impact** related to hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

d. According to the Department of Toxic Substances Control EnviroStor database, the project site or off-site improvement area is not located on a site that is included on a list of

hazardous materials sites compiled pursuant to Government Code Section 65962.5.¹¹ In addition, as part of the Phase I ESA prepared for the project site, Environmental Data Resources Inc. conducted a search of local, State, and federal agency databases regarding the project site and known contaminated sites in the immediate vicinity. According to the search, the project site is not located in the vicinity of any known contaminated sites. Therefore, the project would not create a significant hazard to the public or the environment associated with such, and **no impact** would occur.

- e. The nearest airport to the site is the Byron Airport, which is located approximately 10 miles southeast of the site. As such, the project site is not located within two miles of any public airports or private airstrips, and does not fall within an airport land use plan area. Therefore, **no impact** related to a safety hazard for people residing or working in the project area related to such would occur.
- f. In 1996, the City of Antioch approved an Emergency Plan that addresses response to disasters, including, but not limited to, earthquakes, floods, fires, hazardous spills or leaks, major industrial accidents, major transportation accidents, major storms, airplane crashes, environmental response, civil unrest, and national security emergencies. The plan outlines the general authority, organization, and response actions for City of Antioch staff when disasters happen. Implementation of the proposed project would not modify the existing roadways in the area, but would provide additional connections to the existing roadway system, which would allow for additional route options during an emergency. Thus, the proposed project would not physically interfere with the Emergency Plan, particularly with identified emergency routes. Furthermore, the proposed project would not include land uses or operations that could impair implementation of the plan. Therefore, the proposed project would not interfere with an emergency evacuation or response plan, and a **less-than-significant** impact would occur.
- g. Issues related to wildfire hazards are discussed in further detail in Section XX, Wildfire, of this Initial Study. According to the California Department of Forestry and Fire Protection (CAL FIRE) Fire and Resource Assessment Program, the project site and off-site improvements area are located within a Local Responsibility Area and is included in a Moderate Fire Hazard Severity Zone; thus, the site is not located within a Very High Fire Hazard Severity Zone.¹² The area to the south of the project site, which is located outside of the City limits within a State Responsibility Area, is similarly classified as a Moderate Fire Hazard Severity Zone. Upon completion of the Creekside/Vineyards at Sand Creek to the east of the project site, as well as future development of residential uses to the north and northeast of the project site, wildfire risk at the project site would be further reduced.

The open space areas proposed within the northern, western, and southern portions of the project site would be subject to all applicable defensible space requirements set forth in PRC Section 4291. PRC Section 4291 establishes guidelines to reduce vegetation growth, and thereby minimize the fuel load within the vicinity of structures. In the case of the proposed project, maintenance of the defensible space on each lot would be the responsibility of the individual property owner.

¹¹ Department of Toxic Substances Control. *EnviroStor*. Available at: <https://dtsc.ca.gov/your-envirostor/>. Accessed June 2021.

¹² California Department of Forestry and Fire Protection. *Contra Costa County, Very High Fire Hazard Severity Zones in LRA*. January 7, 2009.

Based on the above, the proposed project would not expose people or structures, either directly or indirectly, to the risk of loss, injury or death involving wildland fires, and a **less-than-significant** impact would occur.

X. HYDROLOGY AND WATER QUALITY.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. Result in substantial erosion or siltation on- or off-site;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv. Impede or redirect flood flows?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

- a. The following discussion provides a summary of the proposed project’s potential to violate water quality standards/waste discharge requirements or otherwise degrade water quality within Sand Creek during construction and operation.

Construction

During the early stages of construction activities, topsoil would be exposed due to grading and excavation of the site. After grading and prior to overlaying the ground surface with impervious surfaces and structures, the potential exists for wind and water erosion to discharge sediment and/or urban pollutants into stormwater runoff, which could adversely affect water quality within Sand Creek and other downstream waterways.

The State Water Resources Control Board (SWRCB) regulates stormwater discharges associated with construction activities where clearing, grading, or excavation results in a land disturbance of one or more acres. The City’s National Pollutant Discharge Elimination System (NPDES) permit requires applicants to show proof of coverage under the State’s General Construction Permit prior to receipt of any construction permits. The State’s General Construction Permit requires a SWPPP to be prepared for the site. A SWPPP describes BMPs to control or minimize pollutants from entering stormwater and must address both grading/erosion impacts and non-point source pollution impacts of the development project. Because the proposed project would disturb greater than one acre

of land, the proposed project would be subject to the requirements of the State's General Construction Permit.

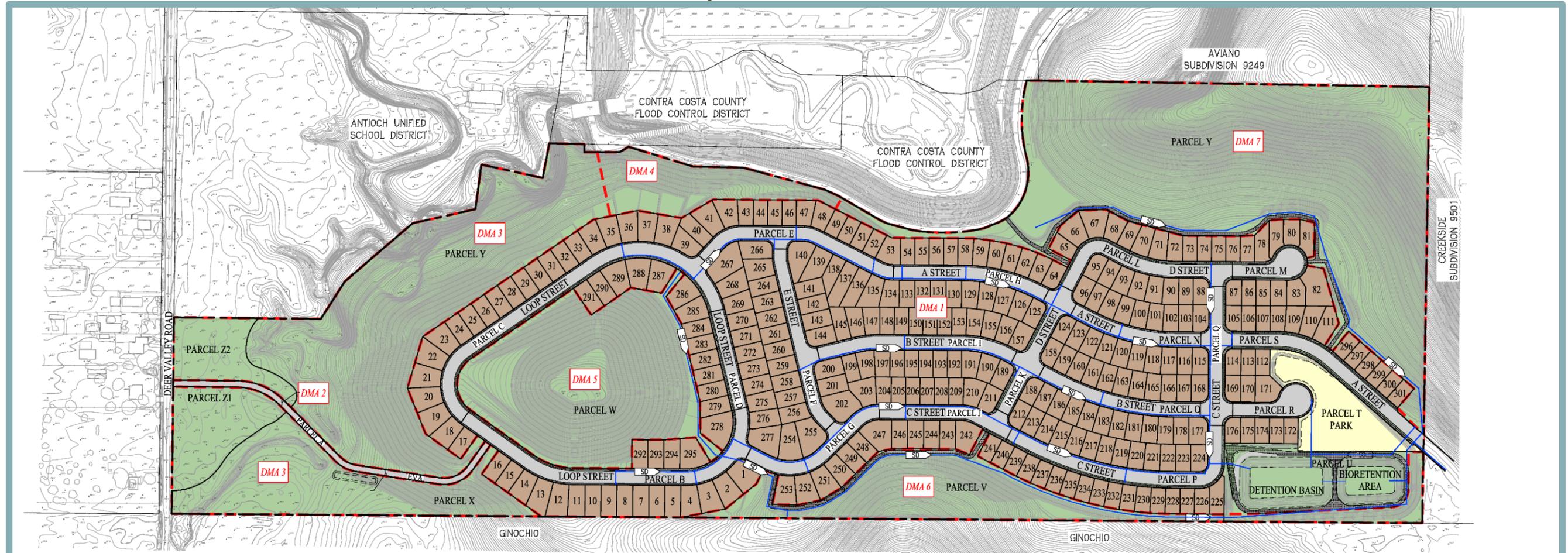
Operation

The proposed uses would not involve operations typically associated with the generation or discharge of polluted water. Thus, typical operations on the project site would not violate any water quality standards or waste discharge requirements, nor degrade water quality. However, addition of the impervious surfaces on the site would result in the generation of urban runoff, which could contain pollutants if the runoff comes into contact with vehicle fluids on parking surfaces and/or landscape fertilizers and herbicides. All municipalities within Contra Costa County (and the County itself) are required to develop more restrictive surface water control standards for new development projects as part of the renewal of the Countywide NPDES permit.

The City of Antioch has adopted the County C.3 Stormwater Standards, which require new development and redevelopment projects that create or alter 10,000 or more sf of impervious area to contain and treat all stormwater runoff from the project site. Thus, the proposed project would be subject to the requirements of the SWRCB and the RWQCB, including the C.3 Standards, which are included in the City's NPDES General Permit. Compliance with such requirements would ensure that impacts to water quality standards or waste discharge requirements would not occur during operation of the proposed project.

A Preliminary Stormwater Control Plan (SWCP) has been prepared for the proposed project (see Appendix D). The SWCP prepared for the proposed project conforms with the most recent Contra Costa Clean Water Program Stormwater C.3 Guidebook and verifies that the proposed project would comply with all City stormwater requirements. In compliance with the C.3 Guidebook, the proposed project would divide the site into seven distinct drainage management areas (DMAs) (see Figure 12). Stormwater runoff within the DMAs would be captured by a series of new inlets and flow, by way of new underground storm drain piping, to a detention basin and bio-retention basin located within the southeastern portion of the project site. The bio-retention basin would remove pollutants primarily by filtering runoff slowly through an active layer of soil. Treated runoff would be captured by a perforated underdrain, which would route flows to future storm drain infrastructure to be constructed as part of the approved Creekside/Vineyards at Sand Creek Project subdivision to the east of the project site. The bio-retention basin would include an overflow inlet that would route excess runoff entering the basin directly to the future Creekside/Vineyards at Sand Creek Project storm drain system during large storm events. The bio-retention basin would be sized to meet or exceed the minimum volume requirements necessary to adequately handle all runoff from the proposed project impervious surfaces and landscaping. Runoff from the EVA road in the southwestern portion of the project site would be collected into a proposed bio-swale within Parcel X and eventually discharge through a new outfall into the tributary to Sand Creek. Detention of the stormwater runoff from the EVA would not be necessary as Sand Creek drains into the Basin. Similar to the bio-retention basin, the bio-swale would filter pollutants before discharge and would be sized to meet or exceed the minimum volume requirements necessary to adequately handle all runoff from the proposed EVA area.

Figure 12
Preliminary Stormwater Control Plan



LEGEND

- | PROPOSED | DESCRIPTION |
|----------|---------------------------------------|
| | SUBDIVISION BOUNDARY |
| | LOT LINE |
| | RIGHT OF WAY |
| | CURB & SIDEWALK |
| | BIORETENTION AREA |
| | STORM DRAIN |
| | DMA BOUNDARY |
| | FIELD INLET |
| | MANHOLE |
| | IMPERVIOUS AREA |
| | PERVIOUS AREA |
| | LOTS |
| | OPTIONAL PARK/FUTURE DEVELOPMENT AREA |
| | DRAINAGE MANAGEMENT AREA |

AREA ID	PERVIOUS/IMPERVIOUS AREAS				TOTAL (SF)	DETENTION REQUIRED (CY)	DETENTION PROVIDED (CY)	BIORETENTION REQUIRED (SF)	BIORETENTION PROVIDED (SF)	PONDING (IN)
	PER (SF)	PER (%)	IMP (SF)	IMP (%)						
DMA 1	712,500	33.7%	1,398,700	66.3%	2,111,200	231,335	235,000	13,860	13,900	12
DMA 2	0	0.0%	23,900	100.0%	23,900	---	---	1,760	1,800	12
TOTAL	712,500	33.4%	1,422,600	66.6%	2,135,100	231,335	235,000	15,620	15,700	---

SELF TREATING DMA SUMMARY	
AREA ID	AREA (AC)
DMA 3	16.9
DMA 4	2.0
DMA 5	7.1
DMA 6	4.6
DMA 7	16.8
TOTAL	47.4

APPENDIX E
POST-PROJECT CONDITIONS
ALBERS PROPERTY

CITY OF ANTIOCH CONTRA COSTA COUNTY CALIFORNIA

SCALE: 1" = 150' DATE: MAY 22, 2019

cbg
CIVIL ENGINEERS SURVEYORS PLANNERS

SAN RAMON (925) 866-0322
SACRAMENTO (916) 375-1877
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Based on the above, the proposed project would comply with the requirements of the SWRCB and the RWQCB, and would meet or exceed C.3 Standards. Therefore, during operation, the project would comply with all relevant water quality standards and waste discharge requirements, and would not degrade water quality.

Conclusion

Based on the SWCP prepared for the proposed project, the project would comply with all applicable regulations during operation, does not involve uses associated with the generation or discharge of polluted water, and would be designed to adequately treat stormwater runoff from the site prior to discharge. However, disturbance of the on-site soils during construction activities could result in a **potentially significant** with regard to violation of water quality standards and degradation of water quality should adequate BMPs not be incorporated during construction in accordance with SWRCB regulations.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

- X-1. *Prior to issuance of grading permits, the contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP). The developer shall file the Notice of Intent (NOI) and associated fee to the SWRCB. The SWPPP shall serve as the framework for identification, assignment, and implementation of BMPs. The contractor shall implement BMPs to reduce pollutants in stormwater discharges to the maximum extent practicable. The SWPPP shall be submitted to the Director of Public Works/City Engineer for review and approval and shall remain on the project site during all phases of construction. Following implementation of the SWPPP, the contractor shall subsequently demonstrate the SWPPP's effectiveness and provide for necessary and appropriate revisions, modifications, and improvements to reduce pollutants in stormwater discharges to the maximum extent practicable.*
- b,e. The City of Antioch currently does not rely on groundwater for water supplies.¹³ Therefore, any water demand associated with the proposed project would not result in a depletion of groundwater in the project area. It should be noted that the project would develop portions of the site and the off-site improvement area with impervious surfaces, which could impede groundwater recharge. However, approximately 50 percent of the site would be retained as open space, which would allow for the natural percolation of stormwater in those areas, particularly the open space areas associated with Sand Creek and the creek's tributary, which would continue to contribute to groundwater recharge similar to existing conditions. The proposed detention basin, bio-retention basin, and bio-swale, as well as the open space area associated with Sand Creek and the creek's tributary, would allow for captured stormwater to infiltrate underlying soils in a manner similar to what currently occurs on-site. Therefore, the proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin, and would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Thus, a **less-than-significant** impact would occur.

¹³ City of Antioch. 2015 Urban Water Management Plan [pg. 6-12]. May 2016.

- ci-iii. Development of the proposed project would result in an increase in impervious surfaces on the project site, which would alter the existing drainage pattern of the site. However, as discussed above, the project is required to comply with C.3 Standards and is proposed to include appropriate site design measures, source controls, and hydraulically-sized stormwater treatment measures. In addition, projects creating or replacing an acre or more of impervious area must also provide flow control such that post-project runoff does not exceed estimated pre-project rates and durations.¹⁴

As discussed above, runoff from the impervious areas of the site would be collected and conveyed to the proposed detention and bio-retention basin, and runoff from the EVA specifically would be collected and conveyed to a bio-swale. Per the SWCP prepared for the project, the detention and bioretention facilities would be designed to exceed the minimum volume needed to treat and control runoff from all proposed impervious surfaces and sufficient to ensure that the post-project flows from the project site would not exceed pre-project flows.

In order to ensure that the proposed project's stormwater treatment facilities remain adequate, long-term maintenance would be required. Routine maintenance of the facilities is necessary to ensure that infiltration of water is unobstructed, erosion is prevented, and soils are held together by biologically active plant roots. As noted in the SWCP, proper operation and maintenance of the stormwater management facilities would be the sole responsibility of the future homeowner's association (HOA). The project applicant would be required to prepare and submit, for the City's review, an acceptable Operations and Maintenance Plan in conjunction with project improvement plans. With implementation of the required maintenance activities, the proposed stormwater facilities would continue to properly manage runoff long after completion of construction activities.

Should the Creekside/Vineyards at Sand Creek Project not be developed, an alternative access roadway may be constructed as part of the proposed project. The alternative roadway would connect the northern portion of the site to the future Sand Creek Road, following the eastern boundary of the CCCFCD property and Basin and crossing Sand Creek. The optional roadway was included as part of the Aviano Project and has been analyzed within the associated EIR. Accordingly, should the alternative access roadway be constructed as part of the proposed project, the project applicant would be required to comply with all applicable mitigation measures related to the roadway set forth in the EIR prepared for the Aviano Project.

In conclusion, the proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in erosion, siltation, or flooding on- or off-site, create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff. Consequently, the proposed project would result in a **less-than-significant** impact.

- civ. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 06013C0335F, the northern and western portion of the project site along the alignment of Sand Creek and the creek's tributary is classified as Zone A, which

¹⁴ Contra Costa Clean Water Program. *Stormwater C.3. Guidebook, Stormwater Quality Requirements for Development Applications* [pg. 9]. May 17, 2017.

is a Special Flood Hazard Area located within the 100-year floodplain. As part of the proposed project, development within the mapped 100-year floodplain would be limited to a portion of the proposed EVA road connecting to Deer Valley Road and a portion of the potential alternate access road to the north, should that option be implemented. The remainder of the site, within which the proposed residential buildings and future development would be located, is classified as Zone X, defined by FEMA as an area not within a 100-year or 500-year floodplain.

The proposed EVA road would follow the alignment of an existing unimproved private access road that currently crosses the tributary to Sand Creek in the western portion of the site. A culvert currently exists under the unimproved private road. Substantial grading is not proposed or anticipated to be required for placement of the EVA. The EVA road would be used by emergency vehicles only during an emergency situation, and would not be available for use by the general public. According to FEMA FIRM number 06013C0335F, Zone A in the project vicinity does not have a listed base flood elevation (BFE). A minimum of one foot clearance is required above the BFE for areas within the 100-year floodplain in order to ensure adequate access is maintained. Because the BFE of the floodplain in the vicinity of the proposed EVA is currently unknown, the proposed project may not meet the minimum clearance requirement and could have the potential to impede or redirect flood flows associated with the 100-year floodplain.

Should the Creekside/Vineyards at Sand Creek Project not be developed, an alternative access roadway may be constructed as part of the proposed project. The alternative roadway would connect the northern portion of the site to the future Sand Creek Road, following the eastern boundary of the CCCFCD property and Basin and crossing Sand Creek. The optional roadway was included as part of the Aviano Project and has been analyzed within the associated EIR. Accordingly, should the alternative access roadway be constructed as part of the proposed project, the project applicant would be required to comply with all applicable mitigation measures related to the roadway set forth in the EIR prepared for the Aviano Project.

Because a portion of the proposed EVA would be located within the 100-year floodplain, the proposed project could impede or redirect flood flows, and a **potentially significant** impact would result.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

- X-2. *Prior to issuance of grading permits, the project applicant shall prepare a site-specific hydraulic analysis to determine the BFE within Zone A in the vicinity of the proposed EVA. If the analysis determines that the portion of the proposed EVA within the floodplain would be less than one foot above the BFE, the elevation of the portion of the EVA within the floodplain shall be raised to at least one foot above the BFE or to the satisfaction of the CCCFCD. The site-specific hydraulic analysis and proof of CCCFCD satisfaction shall be submitted to the City of Antioch Community Development Department.*
- d. Tsunamis are defined as sea waves created by undersea fault movement, whereas a seiche is a long-wavelength, large-scale wave action set up in a closed body of water such

as a lake or reservoir. The project area is located over 50 miles from the Pacific Ocean and tsunamis typically affect coastlines and areas up to one-quarter mile inland. Due to the project's distance from the coast, the project site would not be exposed to flooding risks associated with tsunamis. Seiches do not pose a risk to the proposed project, as the project site is not located adjacent to a large closed body of water. Furthermore, as noted above, the proposed project would not include development of any habitable structures within a Flood Hazard Zone. Based on the above, the proposed project would not pose a risk related to the release of pollutants due to project inundation due to flooding, tsunami, or seiche, and **no impact** would occur.

XI. LAND USE AND PLANNING.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	✘	<input type="checkbox"/>
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	✘	<input type="checkbox"/>

Discussion

a. A project risks dividing an established community if the project would introduce infrastructure or alter land use so as to change the land use conditions in the surrounding community, or isolate an existing land use. The proposed project site does not contain existing housing or other development, and the proposed project would be consistent with residential uses approved to the east and north of the site. The proposed project would not alter the existing general development trends in the area or isolate an existing land use. As such, the proposed project would not physically divide an established community and a **less-than-significant** impact would occur.

b. According to the City of Antioch General Plan, the eastern portion of the site is designated Hillside, Estate and Executive Residential/Open Space, while the western portion is designated Commercial/Open Space. The site is zoned Study District. The proposed project would include a General Plan Amendment to the land use map for the Sand Creek Focus Area of the General Plan to change the portion of the site currently designated Hillside, Estate and Executive Residential/Open Space to Medium Low Density Residential/Open Space, as well as an amendment to the text of the Sand Creek Focus Area of the General Plan in order to add an Albers Ranch Sub Area. In addition, the project would require approval of a rezone to change the zoning designation of the site from Study District to HPD, subject to a Master Development Plan. Furthermore, per Section 9-5.2607 of the Municipal Code, all new development within the City is subject to Design Review approval. Approval of the requested GPA and rezone would be subject to the determination of the Antioch City Council.

As discussed throughout this Initial Study, the proposed project would not conflict with City policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect, including, but not limited to, the City’s Tree Preservation and Regulation Ordinance, the City’s noise standards, and applicable SWRCB regulations related to stormwater. For all CEQA issue areas exclusive of air quality, GHG emissions, and transportation, which will be further evaluated in an EIR, this Initial Study includes mitigation to reduce identified environmental impacts to less-than-significant levels. Therefore, the proposed project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental impact. Thus, a **less-than-significant** impact would occur.

XII. MINERAL RESOURCES.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✘
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✘

Discussion

a,b. According to the City of Antioch’s General Plan EIR, areas identified for new development do not contain known mineral resources that would be of value to the region or residents of the State.¹⁵ Therefore, **no impact** to mineral resources would occur as a result of development of the project.

¹⁵ City of Antioch. *Draft General Plan Update Environmental Impact Report* [pg. 5-9]. July 2003.

XIII. NOISE.

Would the project result in:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

a. The following discussion is based on an Environmental Noise Assessment prepared for the proposed project by Saxelby Acoustics (see Appendix E).¹⁶ The report analyzed traffic noise level increases at the project site and at existing sensitive receptors in comparison to the City’s noise level standards. In addition, a discussion of construction noise associated with the proposed project is provided. The following terms are referenced in the sections below:

- Decibel (dB): A unit of sound energy intensity. An A-weighted decibel (dBA) is a decibel corrected for the variation in frequency response to the typical human ear at commonly encountered noise levels. All references to decibels (dB) in this report will be A-weighted unless noted otherwise.
- Day-Night Average Level (L_{dn}): The average sound level over a 24-hour day, with a +10 dBA weighting applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours.
- Community Noise Equivalent Level (CNEL): The cumulative noise exposure over a 24-hour period. Weighting factors of +5 and +10 dBA are applied to the evening and nighttime periods, respectively, to account for the greater sensitivity of people to noise during those periods.

Significance Criteria

The Antioch General Plan Noise Element Section 11.6.1 establishes standards for daytime and nighttime noise levels. The standards are reproduced in below:

11.6.1 Noise Objective: Achieve and maintain exterior noise levels appropriate to planned land uses through Antioch, as described below:

- Residential Single Family: 60 dBA CNEL within rear yards;
- Residential Multi-Family: 60 dBA CNEL within interior open space; and
- Commercial/Industrial: 70 dBA at front setback.

¹⁶ Saxelby Acoustics LLC. *Environmental Noise Assessment, Albers Ranch Project.* June 22, 2021.

In addition, Noise Element Section 11.6.1 establishes standards for maximum allowable noise exposure from transportation noise sources. The maximum allowable exterior noise level is 60 dBA CNEL, applied at outdoor activity areas of single-family residential uses.

Table 2 presented the significance criteria for changes in noise exposure. The table is based upon recommendations made by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been accepted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn} /CNEL.

Table 2	
Significance of Changes in Noise Exposure	
Ambient Noise Level Without Project, L_{dn}/CNEL	Increase Required for Significant Impact
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

Source: Federal Interagency Committee on Noise (FICON).

Sensitive Noise Receptors

Some land uses are considered more sensitive to noise than others, and, thus, are referred to as sensitive noise receptors. Land uses often associated with sensitive noise receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise. In the vicinity of the project site, the nearest existing noise sensitive land uses include the rural single-family residential uses to the west of and north of the project site, with the nearest located approximately 40 feet west of the project site, across Deer Valley Road.

Existing Noise Environment

The existing ambient noise environment at the project site is primarily defined by traffic noise emanating from Deer Valley Road, located west of the project site. To quantify the existing ambient noise environment at the project site, a continuous (24-hour) noise level measurement at one location on the project site on September 17, 2019 (Figure 13). The results of the measurements are summarized in Table 3, presented in terms of day-night average (L_{dn}) noise levels, average hourly (L_{eq}) noise levels, and maximum (L_{max}) noise levels. The median value, denoted L_{50} , represents the sound level exceeded 50 percent of the time during the monitoring period.

Figure 13
Noise Measurement Site



Source: Saxelby Acoustics, 2021.

Table 3								
Summary of Existing Background Noise Measurement Data								
Site	Date	Average Measured Hourly Noise Levels, dBA						
		CNEL/L_{dn}	Daytime (7:00 AM - 10:00 PM)			Nighttime (10:00 PM – 7:00 AM)		
			L_{eq}	L₅₀	L_{max}	L_{eq}	L₅₀	L_{max}
LT-1	9/17/2019 - 9/18/2019	55	50	47	60	49	45	60

Source: Saxelby Acoustics, 2021.

Project Construction Noise

During the construction of the proposed project, heavy equipment would be used for grading, excavation, paving, and building construction, which would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how the equipment is operated, and how well the equipment is maintained. In addition, noise exposure at any single point outside the project site would vary depending on the proximity of construction activities to that point. Standard construction equipment, such as graders, backhoes, loaders, and trucks, would be used on-site.

The maximum noise level for various types of construction equipment at a distance of 50 feet is presented in Table 4. As shown in Table 4, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dB at a distance of 50 feet.

Table 4	
Construction Equipment Noise	
Type of Equipment	Maximum Level, dBA at 50 feet
Auger Drill Rig	84
Backhoe	78
Compactor	83
Compressor (air)	78
Concrete Saw	90
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Jackhammer	89
Pneumatic Tools	85

Source: Roadway Construction Noise Model User's Guide. Federal Highway Administration. FHWA-HEP-05-054. January 2006.

The nearest noise-sensitive receptors are located within 50 feet of the project boundaries and, thus, could be subjected to project construction noise in excess of the City's 60 dB exterior noise level threshold. Therefore, the temporary increase in noise levels due to construction could be potentially significant.

It is noted that construction activities are limited by the General Plan Noise Element and the Noise Ordinance during certain hours. The General Plan limits noise-producing construction related activities to between the hours of 7:00 AM and 7:00 PM Monday through Saturday, with no construction allowed on Sundays and public holidays. Sections 5-17.04 and 5-17.05 of the City of Antioch Municipal Code restrict construction activities to between the hours of 8:00 AM and 5:00 PM on Monday through Friday when located within 300 feet of residential uses, and to the hours of 9:00 AM and 5:00 PM on Saturdays. Compliance with the allowable construction hours would not affect the conclusion presented above.

Project Operational Noise

Noise generated during operations of the proposed project would be limited to residential noise and traffic noise, as discussed in further detail below.

Residential Noise

The proposed project would include typical residential noise which would be compatible with the adjacent existing residential uses. Therefore, impacts resulting from project operational noise would be considered less than significant.

Traffic Noise

As discussed in Section XVII, Transportation, of this Initial Study, the proposed project would result in increased traffic volumes on local roadways. Thus, the proposed project could cause an increase in traffic noise levels in the project area. To assess noise impacts due to project-related traffic increases on the local roadway network, traffic noise levels are predicted at sensitive receptors for existing and existing plus project conditions.

Existing noise levels due to traffic were calculated using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD 77 108). The model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. Project trip generation volumes were provided by the project traffic engineer (Fehr & Peers), and truck usage and vehicle speeds on the local area roadways were estimated from field observations.

Table 5 summarizes the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the project area.

As shown in Table 5, the maximum increase in traffic noise at the nearest sensitive receptor is predicted to be 2.3 dBA following implementation of the proposed project. Based on the ambient noise level data presented in Table 3, the existing transportation noise level is less than 60 dB CNEL. In noise environments where the ambient noise level is less than 60 dB CNEL, a +5.0 dB increase is considered significant (see Table 2). Therefore, the 2.3 dBA increase in traffic noise would be considered less than significant.

**Table 5
Predicted Traffic Noise Level and
Project-Related Traffic Noise Level Increases**

Roadway	Segment	Predicted Exterior Noise Level (dBA L _{dn}) at Closest Sensitive Receptors		
		Existing + Creekside + Promenade	Existing + Project	Change
Deer Valley Road	Lone Tree Way to Prewett Ranch Drive	62.4	62.6	0.2
Deer Valley Road	South of Prewett Ranch Drive	71.0	71.4	0.4
Lone Tree Way	Deer Valley Road to Hillcrest Avenue	64.0	64.2	0.2
Lone Tree Way	East of Hillcrest Avenue	65.2	65.5	0.3
Prewett Ranch Road	Deer Valley Road to Hillcrest Avenue	58.4	58.8	0.4
Hillcrest Avenue	North of Lone Tree Way	60.6	61.3	0.8
Hillcrest Avenue	Lone Tree Way to Prewett Ranch Drive	61.9	62.6	0.7
Hillcrest Avenue	South of Prewett Ranch Drive	57.5	59.8	2.3

Source: Saxelby Acoustics, 2021.

Conclusion

Residential noise and traffic noise associated with operations of the proposed project would not result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of the standards established in the City’s General Plan, or applicable standards of other agencies. However, construction noise could exceed the City’s 60 dB exterior noise level threshold at the nearest existing receptor. Thus, a **potentially significant** impact related to the generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

XII-1. *Prior to approval of grading permits, the City shall establish the following requirements, via written notation on final improvement plans, subject to review and approval by the City of Antioch Community Development Department:*

- *Construction activities shall be limited to the hours of 8:00 AM and 5:00 PM Monday through Friday when work is within 300 feet of occupied dwellings, and to between the hours of 7:00 AM and 7:00*

PM Monday through Friday when work occurs greater than 300 feet from occupied dwellings. Such activities should be limited to the hours of 9:00 AM and 5:00 PM on Saturdays. No construction shall be allowed on Sundays and public holidays.

- *The construction contractor shall use temporary noise attenuation fences to protect sensitive receptors west of the project site.*
- *The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.*
- *Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.*
- *When not in use, motorized construction equipment shall not be left idling for more than five minutes.*
- *Stationary equipment (power generators, compressors, etc.) shall be located at the furthest practical distance from nearby noise-sensitive land uses or sufficiently shielded to reduce noise-related impacts.*

- b. Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities (PPV) in inches per second (in/sec). Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of PPV. Table 6 indicates that the threshold for architectural damage to structures is 0.20 in/sec PPV. Per the Environmental Noise Assessment, a threshold of 0.2 in/sec PPV is considered to be a reasonable threshold for short-term construction projects.

During project construction, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of construction. The range of vibration source levels for construction equipment commonly used in similar projects are shown in Table 7.

The Table 7 data indicate that construction vibration levels anticipated for the project are less than the 0.2 in/sec threshold at distances of 26 feet. Sensitive receptors which could be impacted by construction related vibrations associated with the proposed project, especially vibratory compactors/rollers, would be located approximately 40 feet, or further, from the proposed construction activities. At such distances, construction vibrations would not exceed acceptable levels, and a **less-than-significant** impact would occur.

- c. The nearest airport to the site is the Byron Airport, located approximately 10 miles southeast of the site. Given the substantial distance between the airport and the project site, noise levels resulting from aircraft at the nearest airport would be negligible at the proposed project site. Therefore, **no impact** would occur.

Table 6			
Effects of Vibration on People and Buildings			
PPV		Human Reaction	Effect on Buildings
mm/sec	in/sec		
0.15-0.30	0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10-15	0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: Transportation Related Earthborne Vibrations. Caltrans. TAV-02-01-R9601. February 2002.

Table 7			
Vibration Levels for Various Construction Equipment			
Type of Equipment	PPV at 25 feet (inches/second)	PPV at 50 feet (inches/second)	PPV at 100 feet (inches/second)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210 (< 0.20 at 26 feet)	0.074	0.026

Source: Transit Noise and Vibration Impact Assessment Guidelines. Federal Transit Administration. May 2006.

XIV. POPULATION AND HOUSING.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	✘	<input type="checkbox"/>
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✘

Discussion

- a. The proposed project would include the development of 294 single-family residential units, a future 150-bed assisted living facility, and neighborhood commercial land uses, thereby inducing population growth in the project area. Per the City’s 2015-2023 Housing Element, the City of Antioch had an average household size of 3.15 persons per household.¹⁷ Using the 3.15 persons per household figure and assuming one person per bed for the future 150-bed assisted living facility, the proposed project could provide housing for up to approximately 1,076 people (294 proposed households X 3.15 persons per household + 150 assisted living residents = 1,076 new residents).

According to the City of Antioch Housing Element, Antioch’s population increased by approximately 4.0 percent between the years 2010 and 2014, from 102,372 residents to 106,455 residents.¹⁸ Contra Costa County’s population has increased at a similar pace, growing by approximately 3.6 percent from 2010 to 2014, from 1,049,025 to 1,087,008. Per the City’s Housing Element, the ABAG estimates that the City’s population would be 116,200 in 2030, increasing by 9,745 persons. Assuming that the proposed project would be fully built out and operating at full capacity by 2030, the project’s contribution to the overall population increase by 2030 would not contribute to an increase above the anticipated population levels. It should be noted that the City of Antioch has previously considered buildout of the proposed project site (as well as the Sand Creek Focus Area) as part of the General Plan.

Therefore, the proposed project would not result in substantially more intensive population growth beyond what has been previously analyzed for the site, and a **less-than-significant** impact would occur.

- b. The proposed project site is currently vacant, and does not include existing housing or other habitable structures. As such, the proposed project would not displace a substantial number of existing housing or people and would not necessitate the construction of replacement housing elsewhere. Therefore, **no impact** would occur.

¹⁷ City of Antioch. *Housing Element* [pg. 2-9]. Adopted April 14, 2015.

¹⁸ City of Antioch. *City of Antioch Housing Element 2015-2023* [pg. 2-2]. Adopted April 14, 2015.

XV. PUBLIC SERVICES.

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Other Public Facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

- a. Fire protection services for the project area are provided by the Contra Costa County Fire Protection District (CCCFPD). The CCCFPD is an “all-hazards” organization providing fire suppression, paramedic emergency medical services (EMS), technical rescue, water rescue, and fire prevention/investigation services to more than 600,000 residents across a 304 square mile coverage area. The CCCFPD operates 25 fire stations and responds to approximately 45,000 incidents annually. Four of the fire stations are located within the City of Antioch. Station 88 is located approximately three miles northeast of the project site. A future CCCFPD fire station is planned for development on a two-acre property as part of the approved The Ranch Residential Project. The future fire station would house up to four firefighting equipment vehicles. Upon completion of the proposed project, the CCCFPD would provide fire protection services to the project site.

The proposed project would be required to pay applicable fire protection fees per the City’s Master Fee Schedule. Additionally, the City would require the project applicant to participate in or assist in the formation of a Community Facilities District (CFD) to fund the incremental increase in demand for fire protection and ambulance services associated with the proposed project. In addition, the proposed project would be constructed in accordance with the fire protection requirements of the most recent California Fire Code. The CCCFPD and the City’s Building Inspection Services Division would review the project building plans to ensure compliance with all code requirements. Therefore, the proposed project would have a **less-than-significant** impact related to the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts.

- b. The Antioch Police Department (Antioch PD) currently provides police protection services to the project area. The Antioch PD operates out of the police headquarters at 300 L Street, and is currently staffed with 104 sworn and 33 non-sworn employees.¹⁹ According to the Antioch General Plan EIR, population growth has created an increased demand for police-related services, and consequently a need for additional Antioch PD staff. The City of Antioch General Plan establishes a goal for the Antioch PD staffing ratio to be between 1.20 to 1.50 officers per 1,000 residents.²⁰ Per the City’s Housing Element, the City of

¹⁹ City of Antioch. *About APD*. Available at: <http://www.antiochca.gov/police/about-apd/>. Accessed June 2021.

²⁰ City of Antioch. *Draft General Plan Update Environmental Impact Report [pg. 4.11-1]*. July 2003.

Antioch had a population of 106,455 in 2014. Thus, the Antioch PD staffing ratio is approximately 1.0 per 1,000 residents.

The proposed project would increase the demand for police protection services at the site. However, the project applicant would be required to pay Development Impact Fees for police facilities per Section 9-3.50 of the City Municipal Code, and the project site would be required to annex into a CFD for financing police services. Therefore, the project would have a **less-than-significant** impact related to the need for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts.

- c. School services in the City are mostly provided by the Antioch Unified School District (AUSD). Parts of Antioch (mostly within the Sand Creek and East Lone Tree focus area) are served by the Brentwood Unified and the Liberty School Districts. School services within the project site are provided by the Brentwood Unified School District (BUSD). The proposed project would include the development of 294 single-family residence and, thus, would increase demand for school facilities and services. It should be noted that the proposed project may consist of a 150-bed future assisted living facility and neighborhood commercial land uses. The assisted living facility and neighborhood commercial land uses would not house school-age residents and would not increase the demand for school facilities and services.

The BUSD collects development fees for new residential projects on a per square foot basis. The development fees serve to offset school facility costs associated with serving new students. Proposition 1A/SB 50 prohibits local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any “[...] legislative or adjudicative act...involving ...the planning, use, or development of real property” (Government Code 65996[b]). Satisfaction of the Proposition 1A/SB 50 statutory requirements by a developer is deemed to be “full and complete mitigation.” Because the project applicant would be required to pay development fees to the BUSD, the proposed project would result in a **less-than-significant** impact regarding an increase in demand for schools.

- d,e. Consistent with the requirements of the Quimby Act, Standard 3.5.7.2 in the City of Antioch General Plan and Section 9-4.1004 of the Antioch Municipal Code set a standard of five acres of parks and open space per 1,000 residents.²¹ The City of Antioch receives land for parks through land dedications or purchases funded through fee collection. The Antioch Municipal Code requires a dedication of parkland at the rate of 0.015 acres per single-family unit. Given that the proposed project would include a total of 294 residential-units, the project would be required to include a minimum of 4.41 acres of dedicated public parkland. Alternatively, fees may be paid in lieu of parkland dedication at a rate of \$1,500 for single-family detached units, and \$1,100 for single-family attached units.

In total, approximately 49.1 acres of the site would be retained as open space for parks, open space, recreation, and water quality facilities, including a 1.5-acre private park proposed in the southeastern portion of the project site. The proposed project would also include a number of community trails on-site that would provide access to the designated open space and recreational areas on the site. Pursuant to Section 9-4.1010 of the City’s Municipal Code, a portion of the total 49.1 acres of open space land and private parks

²¹ City of Antioch. *City of Antioch General Plan* [pg. 3-12]. November 23, 2003.

proposed may count for park credits against the amount of land required to be dedicated, subject to final determination by the City Parks and Recreation Commission. If the City determines that the minimum parkland dedication requirements are not met for the project, the project applicant would be subject to payment of in-lieu park fees pursuant to Sections 9-4.1005 through 9-4.1007 of the Municipal Code. In addition, the project would be required to pay Development Impact Fees, which include a component for parks. Therefore, the proposed project would have a ***less-than-significant*** impact related to the need for new or physically altered parks or other public facilities, the construction of which could cause significant environmental impacts.

XVI. RECREATION.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

a,b. The proposed project would include the development of 294 residential units, as well as a future 150-bed assisted living facility and neighborhood commercial development. Thus, the proposed project could result in an increase in the use of existing neighborhood and regional parks, and/or other recreational facilities. While the project site is located approximately three miles southeast of the Contra Loma Regional Park, project residents would be more likely to use park facilities included in the proposed project.

Approximately 49.1 acres of the site would be retained as open space for parks, open space, recreation, and water quality facilities, including a 1.5-acre private park proposed in the southeastern portion of the project site. In addition, the proposed project would include a number of community trails on-site that would provide access to the designated open space and recreational areas on the site. The designated open space/maintenance trail in Parcel Y would provide community access to Sand Creek. The proposed project would also include an open space picnic area between lots 53 and 54 south of Sand Creek.

As noted in Section XIII, Public Services, above, the proposed project would meet the park dedication requirements established by Section 9-4.1004 of the Antioch Municipal Code, through dedication of parkland, payment of in-lieu park fees, or a combination of both. Therefore, the increase in population associated with the proposed project would not be expected to result in substantial physical deterioration of any existing neighborhood or regional parks or other recreational facilities, and would not result in adverse physical effects related to the construction or expansion of new facilities. Thus, a **less-than-significant** impact would occur.

XVII. TRANSPORTATION.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	✘	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	✘	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	✘	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Result in inadequate emergency access?	✘	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

a. The proposed project would include development of 294 single-family residential units, a future 150-bed assisted living facility, and commercial uses, which would result an increase in vehicle traffic on the street system surrounding the project area. In addition, the project has the potential to generate new bicycle and pedestrian traffic in the area. As noted below, determination of traffic impacts based solely on vehicle level of service (LOS) is no longer allowable based on CEQA Guidelines Section 15064.3. However, the potential remains for the proposed project to result in conflicts with General Plan policies related to transportation facilities, including transit, roadway, bicycle, and pedestrian facilities. Therefore, a **potentially significant** impact could occur.

Further analysis of this impact will be discussed in the Transportation chapter of the Albers Ranch EIR being prepared for the project.

b. Section 15064.3 of the CEQA Guidelines provides specific considerations for evaluating a project’s transportation impacts. Pursuant to Section 15064.3, analysis of VMT attributable to a project is the most appropriate measure of transportation impacts. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Determination of impacts based on VMT have been required by law Statewide since July 1, 2020. Although neither the City of Antioch nor the Contra Costa County Transportation Authority (CCTA) has established any standards or thresholds on VMT, the Office of Planning and Research (OPR) suggests that residential projects that generate VMT per capita at 15 percent less than the existing City or regional average could be considered less than significant. The proposed project would result in increased VMT associated with future residents travelling between the project site and other locations within the project region. Further analysis is required to evaluate whether the proposed project would be consistent with the OPR’s suggested guidelines related to VMT. Therefore, the proposed project could conflict with CEQA Guidelines Section 15064.3(b) related to VMT, and a **potentially significant** impact could occur.

Further analysis of this impact will be discussed in the Transportation chapter of the Albers Ranch EIR being prepared for the project.

c,d. Primary access to the proposed project would be provided by a new on-site roadway connecting to the planned Hillcrest Avenue extension east of the site. The connection to Hillcrest Avenue is contingent upon construction of the Creekside/Vineyards at Sand Creek Project. In the event that the Creekside/Vineyards at Sand Creek Project is not constructed, access to the proposed project may be provided by an alternate roadway

connecting the northern portion of the project site to the future Sand Creek Road included as an IOD as part of the Aviano Project. Within the project site, all proposed internal streets would be private and would be consistent with applicable City of Antioch design standards. Further analysis is required to evaluate whether the proposed access points would substantially increase hazards due to a geometric design feature or incompatible uses, or provide adequate emergency access to the site. An EVA only roadway would provide secondary access from Deer Valley Road to the western portion of the project site. The proposed EVA road would follow the alignment of an existing unimproved private access road that currently crosses the tributary to Sand Creek in the western portion of the site. An existing culvert is located under the portion of the EVA that crosses the tributary. Because a portion of the EVA would be located within a floodplain and over an existing culvert, further analysis is necessary to ensure that the EVA is designed sufficient to withstand the weight of emergency vehicles.

Construction traffic associated with the proposed project and off-site improvements would include heavy-duty vehicles that would share the area roadways with normal vehicle traffic, creating potential conflicts with other roadway users, as well as transport of construction material, and daily construction employee trips to and from the site. The short-term increase in traffic that would occur during the construction phase of the proposed project could temporarily disrupt daily traffic flows on area roadways, including emergency response vehicles.

Thus, a ***potentially significant*** impact could occur related to increased hazards due to geometric design features or incompatible uses and inadequate emergency access.

Further analysis of this impact will be provided in the Transportation chapter of the Albers Ranch EIR being prepared for the project.

XVIII. TRIBAL CULTURAL RESOURCES.

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k).	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

a,b. As discussed in Section V, Cultural Resources, of this Initial Study, known historic resources do not exist on-site or in the off-site improvement area. In addition, based on the results of the records search, review of archival maps and photographs, Native American settlement patterns, geoarchaeological study, site specific variables, field survey, and assessment of direct or indirect project impacts conducted as part of the Cultural and Paleontological Resources Inventory prepared for the proposed project, the potential for the discovery of buried archaeological materials within the project area is considered to be low.

In compliance with AB 52 (PRC Section 21080.3.1), a project notification letter was distributed to the Amah Mutsun Tribal Band of Mission San Juan Bautista, Chicken Ranch Rancheria of Me-Wuk Indians, Indian Canyon Mutsun Band of Costanoan, Muwekman Ohlone Indian Tribe of the SF Bay Area, Nashville Enterprise Miwok-Maide-Nishinam Tribe, North Valley Yokuts Tribe, the Ohlone Indian Tribe, Tule River Indian Tribe, Wilton Rancheria, and the Confederated Villages of Lisjan. The letters were distributed on May 19, 2021. Requests for consultation were not received within the mandatory 30-day response period.

Based on the above, known Tribal Cultural Resources do not exist within the proposed project site or off-site improvement area. Nevertheless, the possibility exists that construction of the proposed project could result in a substantial adverse change in the significance of a Tribal Cultural Resource if previously unknown cultural resources are uncovered during grading or other ground-disturbing activities. Thus, a **potentially significant** impact to Tribal Cultural Resources could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

XVIII-1. Implement Mitigation Measures V-1 and V-2.

XIX. UTILITIES AND SERVICE SYSTEMS.

Would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

a-c. Water supply, wastewater treatment, stormwater drainage, electric power, natural gas, and telecommunications facilities necessary to serve the proposed project are described in the following sections.

Water Supply

Principal sources of raw water supply to the City of Antioch are the Sacramento/San Joaquin Rivers Delta and the Contra Costa Canal, which are stored in the Antioch Municipal Reservoir. Buildout of the Sand Creek Focus Area, including the project site, is accounted for in the City's Water System Master Plan Update, which provides a detailed analysis of the City's water distribution system. The Water System Master Plan Update included the preparation of a Capital Improvement Program (CIP) that includes improvements necessary to provide safe and reliable water delivery throughout the City based on projected growth and associated increases in demand on the City's distribution system.

Potable water would be distributed to the project site by an extension of the existing 12-inch Zone III trunk line beneath Hillcrest Avenue. The existing 12-inch Zone III trunk line would continue south to I Street, planned by the Creekside/Vineyards at Sand Creek Project, and the head west to the project boundary. Additionally, in-tract streets would include water lines that would be looped from the western project boundary up Deer Valley Road to connect to the City's existing water system. The water distribution system improvements planned for in the Water System Master Plan Update and associated CIP, as well as the infrastructure improvements included in the proposed project, would be

capable of accommodating the increased demand for water supplies associated with buildout of the proposed project.

Per the City's 2015 Urban Water Management Plan (UWMP), adequate water supplies will be available to accommodate buildout of the City under normal year, single year, and multiple-dry year demand scenarios, accounting for mandatory measures included in the City's Water Shortage Contingency Plan. Although the proposed project is not specifically identified in the City's 2015 UWMP, the Sand Creek Focus Area is included, and the City's growth projections and associated water demand projections (an additional 3,393 mgd from 2015 to 2040) accommodate the proposed project's projected water demand of 36 mgd.

Therefore, the proposed project would not require or result in the relocation or construction of new or expanded off-site water facilities, the construction or relocation of which could cause significant environmental effects, and sufficient water supplies would be available to serve the proposed project and reasonably foreseeable future development during normal, dry, and multiple dry years.

Wastewater Conveyance and Treatment

The City maintains and owns the local sewage collection system and is responsible for the collection and conveyance of wastewater to the Delta Diablo Wastewater Treatment Plant (WWTP). Delta Diablo owns and operates the regional interceptors and WWTP. The project site is located within the Delta Diablo service area. The City of Antioch is responsible for the wastewater collection system from the project site to the designated Delta Diablo regional wastewater conveyance facility. An EIR for the expansion of the wastewater treatment plant capacity to an average dry weather flow of 22.7 million gallons per day (mgd) was completed in April 1988. However, the current WWTP NPDES Permit limits average dry weather flow to 19.5 mgd. From October 2014 through May 2019, the plant treated a daily average of approximately 13 mgd; the highest reported average daily flow was 22.1 mgd.²² Sewage flow to the plant does not fluctuate seasonally, as sewer and storm water systems are separate.²³ Funds for future plant expansion are collected by the City on behalf of Delta Diablo from sewer connection fees.

The General Plan EIR bases anticipated wastewater demand on a generation rate of 220 gpd per residence and 1,000 gpd per acre for commercial uses. The proposed project would include the construction of 294 single-family residential units, as well as a future 150-bed assisted living facility, for a total of 444 units, if conservatively assuming each bed of the assisted living facility as a unit. Thus, the proposed project would be anticipated to generate approximately 97,680 gpd of wastewater from the residential uses on site. The proposed project would include a total of 1.3 acres of commercial development, which would result in an estimated wastewater generation of approximately 1,300 gpd. Therefore, the proposed project would be anticipated to generate a total of 98,980 gpd of wastewater. Sanitary sewer service would be provided by in-tract sewer lines that would connect to I-Street in the Creekside/Vineyards at Sand Creek Project. The Creekside/Vineyards at Sand Creek Project includes a main sewer line that would connect to a planned sewer line in Sand Creek Road.

²² San Francisco Bay Regional Water Quality Control Board. *Order No. R2-2019-0035, NPDES No. CA0038547*. Adopted December 11, 2019.

²³ City of Antioch. *Draft General Plan Update Environmental Impact Report* [pg. 4.12-2]. July 2003.

An increase of 98,980 gpd is relatively minor compared to the 13 mgd of average dry weather flow currently treated by the WWTP, and would not have a substantial impact on the available capacity of the WWTP. The project applicant would be required to pay sewer connection fees, which work to fund needed sewer system improvements. Because the project applicant would pay sewer connection fees, and adequate long-term wastewater treatment capacity is available to serve full build-out of the project, the project would not require or result in the relocation or construction of new or expanded off-site wastewater facilities, the construction or relocation of which could cause significant environmental effects. In addition, adequate wastewater treatment capacity is available to serve the project's projected demand in addition to the provider's existing commitments

Stormwater Drainage

The project site is currently undeveloped, vacant land consisting primarily on non-native vegetation. Completion of the proposed project would increase site runoff due to the introduction of impervious surfaces to the site. As discussed in further detail in Section IX, Hydrology and Water Quality, of this Initial Study, the SWCP for the proposed project conforms with the most recent Contra Costa Clean Water Program Stormwater C.3 Guidebook and verifies that the proposed project would comply with all City stormwater requirements. In compliance with the C.3 Guidebook, the proposed project would include on-site detention and bioretention facilities sized to exceed the minimum volume requirement necessary to adequately manage all runoff from the proposed impervious surfaces. Thus, the project would not require new or expanded off-site stormwater infrastructure. Because the proposed detention and bio-retention facilities would be designed with adequate capacity to capture and treat runoff from proposed impervious surfaces, the proposed project would not generate runoff in excess of the City's existing stormwater system's capacity.

Electric Power, Natural Gas, and Telecommunications

The proposed project would include new connections to existing electric power, natural gas, and telecommunications facilities located in the project vicinity. Thus, substantial expansion of off-site utilities would not be required to serve the proposed residential development, and associated environmental effects would not occur.

Conclusion

Based on the above, the proposed project would not require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. In addition, sufficient water supplies would be available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years, and adequate wastewater treatment capacity is available to serve the project's projected demand in addition to the provider's existing commitments. Thus, a **less-than-significant** impact would occur.

- d,e. Republic Services provides solid waste collection, disposal, recycling, and yard waste services to the City, including the project site. Solid waste and recyclables from the City are taken to the Contra Costa Transfer and Recovery Station in Martinez. Solid waste is transferred from the Transfer and Recovery Station to the Keller Canyon Landfill in Pittsburg. The Keller Canyon Landfill site is 1,399 acres, 244 of which comprise the actual current disposal acreage. The landfill is permitted to accept 3,500 tons of waste per day and has a total estimated permitted capacity of approximately 75 million cubic yards. The

total remaining capacity of the landfill is 63,408,410 million cubic yards (approximately 84 percent of total capacity).²⁴ Due to the substantial amount of available capacity remaining at Keller Canyon Landfill, sufficient capacity would be available to accommodate the project's solid waste disposal needs. Therefore, a ***less-than-significant*** impact related to solid waste would occur as a result of the proposed project.

²⁴ CalRecycle. *SWIS Facility/Site Activity Details Keller Canyon Landfill (O7-AA-0032)*. Available at: <https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4407?siteID=228>. Accessed June 2021.

XX. WILDFIRE.

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

a-d. According to the CAL FIRE Fire and Resource Assessment Program, the proposed project site is not located within a Very High Fire Hazard Severity Zone.²⁵ In addition, the site is not located in a State Responsibility Area. Thus, the proposed project would not be expected to be subject to or result in substantial adverse effects related to wildfires, and a **less-than-significant** impact would occur.

²⁵ California Department of Forestry and Fire Protection. *Contra Costa County, Very High Fire Hazard Severity Zones in LRA*. January 7, 2009.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE.

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

a. As discussed in Section IV, Biological Resources, of this Initial Study, implementation of the proposed project would have the potential to result in adverse effects to special-status plant and wildlife species. In addition, while unlikely, the project could result in impacts related to eliminating important examples of major periods of California history or prehistory associated with undiscovered archeological and/or paleontological resources during project construction. However, the proposed project would be required to comply with applicable City of Antioch General Plan and Municipal Code policies related to biological and cultural resources. In addition, this Initial Study includes mitigation measures that would reduce any related potential impacts to less-than-significant levels. With implementation of the mitigation measures required by this Initial Study, as well as compliance with General Plan policies and all applicable sections of the Municipal Code, development of the proposed project would reduce any potential impacts associated with the following: 1) degradation of the quality of the environment; 2) substantial reduction of or impact to the habitat of fish or wildlife species; 3) causing fish or wildlife populations to drop below self-sustaining levels; 4) threatening to eliminate a plant or animal community; 5) reduction of the number or restrict the range of a rare or endangered plant or animal; or 6) elimination of important examples of the major periods of California history or prehistory.

Based on the above, a **potentially significant** impact could occur if the mitigation measures described in this Initial Study are not implemented.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

XXI-1. Implement Mitigation Measures IV-1 through IV-13, V-1, and V-2.

- b. The proposed project in conjunction with other development within the City of Antioch could incrementally contribute to cumulative impacts in the area. As discussed in Section III, Air Quality, and Section VIII, Greenhouse Gas Emissions, of this Initial Study, construction activities and increased vehicle trips generated by operation of the proposed project, as well as other activities associated with project operations, could result in conflicts with applicable standards related to air quality and GHG emissions. In addition, as discussed in Section XVII, Transportation, project vehicle trips, increase in population, and VMT could result in conflicts with established operations standards for local roadway, bicycle, pedestrian, and transit facilities and/or other established local and State standards. Thus, the proposed project could have impacts that are individually limited, but cumulatively considerable, and a **potentially significant** impact could occur.

Further analysis of this impact will be discussed in the Air Quality and Greenhouse Gas Emissions chapter and Transportation chapter of the Albers Ranch EIR being prepared for the project.

- c. As described in this Initial Study, implementation of the proposed project could result in temporary impacts related to excess noise levels. In addition, the project could expose humans to hazards relating to seismic ground shaking and unstable geologic units. However, the proposed project would be required to implement the project-specific mitigation measures within this Initial Study, as well as applicable policies of the City of Antioch General Plan, to reduce associated direct or indirect impacts to human beings. With implementation of the identified mitigation measures, identified project-specific impacts related to such issues would be reduced to less-than-significant levels. However, further analysis is required to ensure that TAC emissions associated with project construction or other air pollutant emissions do not result in adverse health effects at nearby sensitive receptors. Thus, a **potentially significant** impact could occur.

Further analysis of this impact will be discussed in the Air Quality and Greenhouse Gas Emissions chapter of the Albers Ranch EIR being prepared for the project.

APPENDIX A

TECHNICAL BIOLOGICAL REPORT



LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

ALBERS PROJECT SITE TECHNICAL BIOLOGICAL REPORT ANTIOCH, CALIFORNIA

Prepared by

LIVE OAK ASSOCIATES, INC.

Rick Hopkins, Ph.D., Principal/Senior Wildlife Ecologist
Pam Peterson, Sr. Project Manager/Plant and Wetland Ecologist
Katrina Krakow, M.S., Sr. Project Manager/Staff Ecologist

Prepared for

Angela DeRosa
Raney Management
1501 Sports Drive, Suite A
Sacramento, CA 95834

August 9, 2021

PN 2577-01

Oakhurst: P.O. Box 2697 • 39930 Sierra Way, Suite B • Oakhurst, CA 93644 • Phone: (559) 642-4880 • Fax: (559) 642-4883

San Jose: 6840 Via Del Oro, Suite 220 • San Jose, CA 95119 • Phone: (408) 224-8300

Truckee: P.O. Box 8810 • Truckee, CA 96161 • Phone: (530) 214-8947

South Lake Tahoe: P.O. Box 7314 • South Lake Tahoe, CA 96158 • Phone: (408) 281-5885

www.loainc.com

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1 INTRODUCTION

The project site located at east of Deer Valley Road south of Sand Creek south of the developed portion of the City of Antioch, Contra Costa County, California (“project site”; Figure 1) was evaluated by Live Oak Associates, Inc. (LOA) to ascertain whether or not build-out of a proposed residential development (“project”) would have a significant impact, as defined by the California Environmental Quality Act (CEQA), on the biological resources of the site and region. This report describes the biotic resources of the approximately 96.47-acre project site and evaluates potential impacts to these biotic resources resulting from the proposed project. The site can be found on the Antioch South U.S.G.S. 7.5’ quadrangle in Section 8 of Township 1 North, Range 2 East.

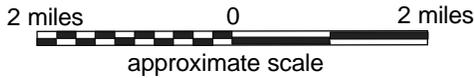
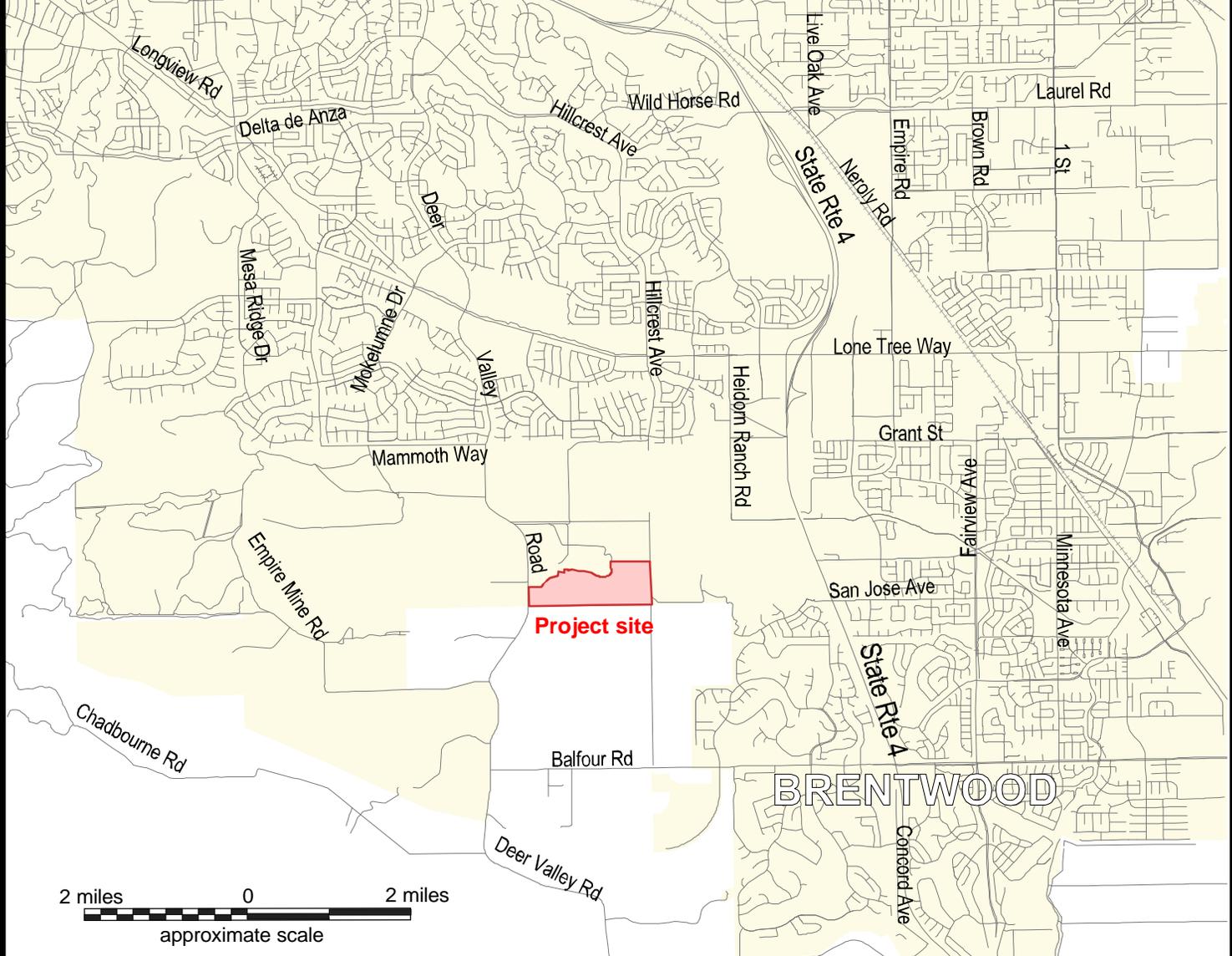
In general, the development of parcels can damage or modify biotic habitats used by sensitive plant and wildlife species. In such cases, site development may be regulated by state or federal agencies, subject to provisions of CEQA, and/or covered by local policies and ordinances. Therefore, this report addresses: 1) sensitive biotic resources potentially occurring in the project site; 2) the federal, state, and local laws regulating such resources, 3) possible significant impacts to these resources that could result from the project; and 4) mitigation measures that would reduce these impacts to a less-than-significant level as defined by CEQA.

The analysis of impacts, as discussed in Section 3.0 of this report, was based on the known and potential biotic resources of the project site discussed in Section 2.0. Sources of information used in the preparation of this analysis included: 1) the *California Natural Diversity Data Base* (RareFind 5; CDFW 2021); 2) the *California Rare Plant Rank* (CNPS 2021); 3) manuals and references related to plants and animals of the region; and 4) policies and ordinances of Antioch that relate to biotic resources.

A field survey of the project site was conducted on May 24, 2021 by LOA staff ecologist Katrina Krakow and LOA plant and wetland ecologist Pam Peterson.

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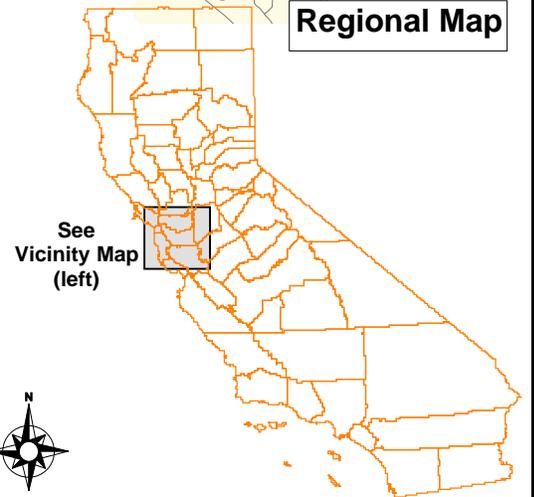
Site Location Map



Vicinity Map



Regional Map



	Live Oak Associates, Inc.		
	Albers Ranch Site / Vicinity Map		
Date	Project #	Figure #	
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1.1 PROJECT DESCRIPTION

Based on the Vesting Tentative Map for the Albers Property (CBG Engineers 2021), the majority of the site would be developed into a 288 single-family home subdivision, roads and assisted living development in the western portion of the site near Deer Valley Road. The remainder of the site would include approximately 40 acres of open space, approximately seven acres of water quality facilities including detention basins, and a 1.5-acre park.

2 EXISTING CONDITIONS

At the time of the field survey, the project site consisted primarily of dry-farmed wheat with some native grassland areas and a portion of the Sand Creek riparian area. Structures are absent from the site. The irregularly shaped site is bounded by Deer Valley Road to the west, dry-farmed wheat and an oil extraction area to the south, dry-farmed wheat to the east, and Sand Creek to the north. The site has hilly topography with elevations ranging from a low of approximately 180 feet (55 meters) National Geodetic Vertical Datum (NGVD) in the northwestern portion of the site to 284 feet NGVD (87 meters) in the southeastern portion of the site.

Annual precipitation in the general vicinity of the project site is about 15-20 inches, almost 85% of which falls between the months of October and March. Virtually all precipitation falls in the form of rain.

Five soil map units occur on the site (NRCS 2021) which are discussed below in Table 1 (Figure 2).

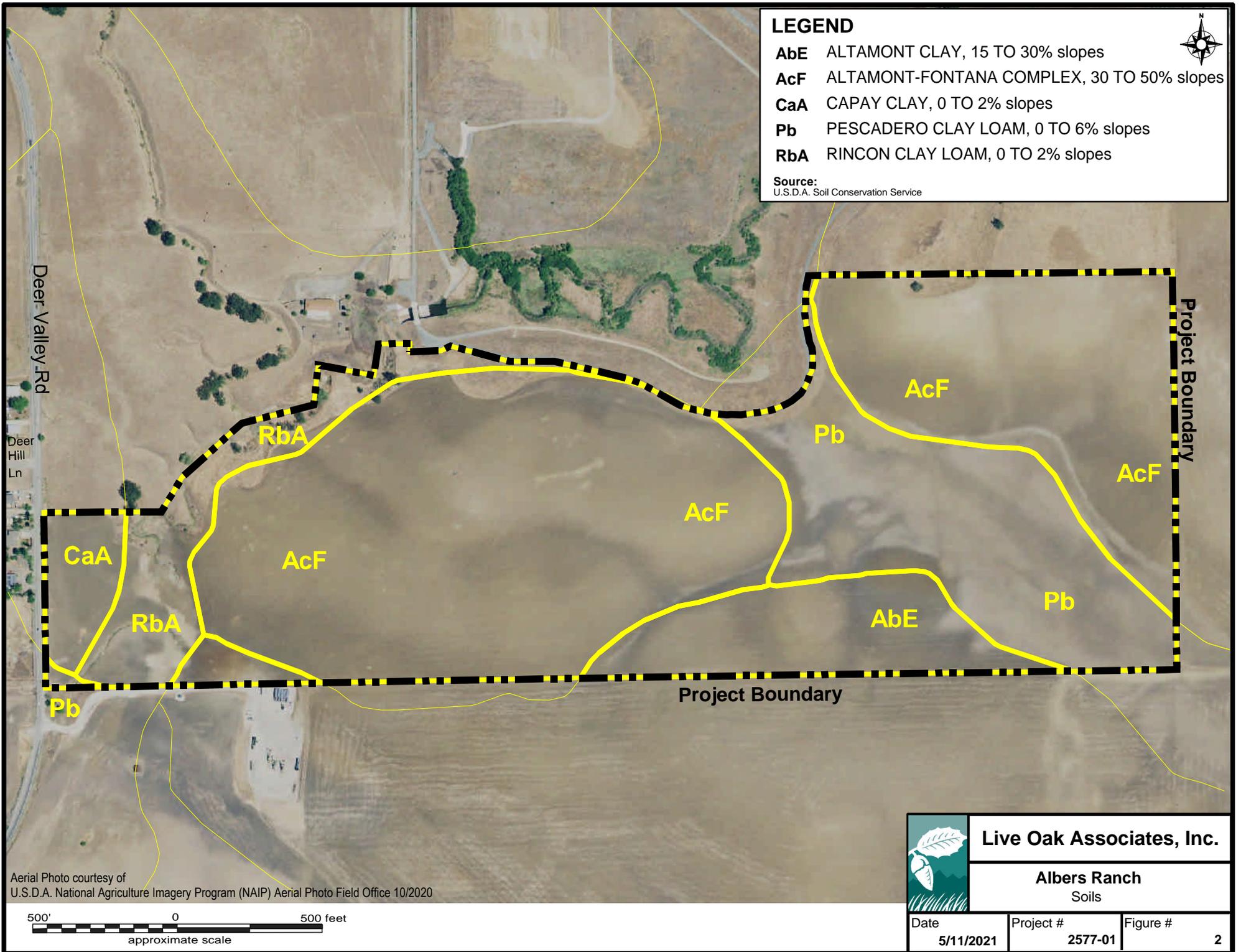
TABLE 1. SOILS OCCURRING ON THE ALBERS RANCH PROJECT SITE (NRCS 2021).					
Soil Series/Soil	Map Symbol	Parent Material	Drainage/Surface Permeability	Hardpan/Duripan	Hydric
ALTAMONT SERIES Altamont clay, 15 to 30% slopes	AbE	Residuum weathered from sandstone and shale	Well-drained/ Moderately low to moderately high	No	No*
ALTAMONT-FONTANA SERIES Altamont-Fontana complex, 30 to 50% slopes	AcF	Residuum weathered from sandstone and shale	Well-drained/ Very low to moderately high	No	No*
BRIONES SERIES Briones loamy sand, 5 to 30% slopes	BdE	Residuum weathered from sandstone	Well-drained/ Moderately high	No	No
CAPAY SERIES Capay clay, 0 to 30% slopes	CaA	Clayey alluvium derived from metamorphic and sedimentary rock	Moderately well-drained/ Moderately low to moderately high	No	No*
PESCADERO SERIES Pescadero clay loam, 0 to 6% slopes	Pb	Alluvium weathered from sandstone and shale	Poorly drained/ Moderately low to moderately high	Yes	Yes
RINCON SERIES Rincon clay loam, 0 to 2% slopes	Rba	Alluvium derived from sedimentary rock	Well-drained/ Moderately low to moderately high	No	No

*Although soil is not considered a hydric soil, minor soil components of this series are considered hydric, so hydric inclusions may occur.

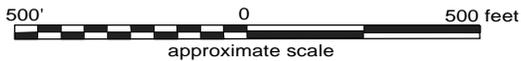
LEGEND

- AbE** ALTAMONT CLAY, 15 TO 30% slopes
- AcF** ALTAMONT-FONTANA COMPLEX, 30 TO 50% slopes
- CaA** CAPAY CLAY, 0 TO 2% slopes
- Pb** PESCADERO CLAY LOAM, 0 TO 6% slopes
- RbA** RINCON CLAY LOAM, 0 TO 2% slopes

Source:
U.S.D.A. Soil Conservation Service



Aerial Photo courtesy of
U.S.D.A. National Agriculture Imagery Program (NAIP) Aerial Photo Field Office 10/2020



Live Oak Associates, Inc.

Albers Ranch
Soils

Date	Project #	Figure #
5/11/2021	2577-01	2

None of these soils are considered serpentine; therefore, special status plants adapted to serpentine soils are not expected to occur on the site, however, special status plants adapted to alkaline and hydric soils may occur on the site. Pescadero Clay Loam is considered a predominantly hydric soil. This soil type occurs within the eastern half of the site and cuts across the site. Hydric soils are defined as saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions such that under sufficiently wet conditions they support hydrophytic vegetation.

2.1 BIOTIC HABITATS

Seven land cover types have been identified on the site and these include Dry-farmed Agriculture; Dry-farmed Agriculture/Wetland Complex; California Annual Grassland; California Annual Grassland with a Significant Native Component; California Annual Grassland (Disturbed); California Sagebrush Scrub; and Mixed Riparian Woodland (Figure 2). In addition to the land cover types, hydrological features identified on the site include the channels of Sand Creek and its unnamed tributary, as well as potential wetlands occurring in the eastern portion of the site, most of the latter which are included in the area identified as Dry-farmed Agriculture/Wetland Complex.

These land cover types and hydrologic features are described in greater detail below.

2.1.1 Dry-farmed Agriculture

The majority of the site (approximately 79.21 acres) currently supports dry-farmed agriculture currently planted in wheat (*Triticum aestivum*) and is regularly disced. Historic photos of the site indicate that these areas of the site have been in agricultural production at least as far back as 1965 which was the date of the oldest historic aerials, we were able to review for the site. At the time of the May 2021 site visit, the wheat crops were already senescent. Although the senesced wheat crop was relatively dense at a height between approximately 12 and 16 inches, other plant species were found to be growing in amongst the wheat, including but not limited to, field bindweed (*Convolvulus arvensis*), yellow star thistle (*Centaurea solstitialis*), mayweed (*Anthemis cotula*), burclover (*Medicago polymorpha*), black mustard (*Brassica nigra*), common fiddleneck (*Amsinckia menziesii*), and common vetch (*Vicia sativa*).



Project Boundary
 (96.47 Acres)

Dry-farmed Agriculture
 (79.21 Acres)

Dry-farmed Agriculture / Wetland Complex
 (9.26 Acres)

California Annual Grassland
 (5.36 Acres)

California Annual Grassland with a Significant Native Component
 (0.80 Acres)

California Annual Grassland (Disturbed)
 (1.41 Acres)

California Sagebrush Scrub
 (0.16 Acres)

Mixed Riparian Woodland
 (0.29 Acres)

Potential Wetland



Aerial Photo courtesy of U.S.D.A. National Agriculture Imagery Program (NAIP) Aerial Photo Field Office 10/2020

	Live Oak Associates, Inc.		
	Albers Ranch Biotic Habitats / Land Uses		
Date	Project #	Figure #	
6/09/2021	2577-01	3	

Wildlife observed within or flying over this habitat of the site during the May 2021 survey included the red-tailed hawk (*Buteo jamaicensis*), mourning dove (*Zenaida macroura*), Common raven (*Corvus corax*), Say's phoebe (*Sayornis saya*), western meadowlark (*Sturnella neglecta*), western kingbird (*Tyrannus verticalis*), western fence lizard (*Sceloporus occidentalis*), Botta's pocket gopher (*Thomomys bottae*) sign, California ground squirrel (*Otospermophilus beecheyi*), and bobcat (*Lynx rufus*) scat.

2.1.2 Dry-farmed Agriculture/Wetland Complex

A broad swale (approximately 9.26 acres) occurs within the agricultural areas of the site from the site's southeastern corner to the northern boundary near the Sand Creek corridor. Within this large swale, a complex of wetlands appears to be present. Potential wetlands throughout this area were identified based on the presence of cracked soils (a primary hydrology indicator under the U.S. Army Corps of Engineers (USACE) wetland delineation protocol) as well as the presence of some plant species with wetland indicators, including, along with their wetland indicator status, Italian rye-grass (*Festuca perennis*) (FAC), Great Valley gumplant (*Grindelia camporum*) (FACW), alkali heath (*Frankenia salina*) (FACW), and broad-leaf pepperweed (*Lepidium latifolium*) (FAC). More annual wetland species may occur in this area than was able to be identified due to the timing of the survey and the fact that most annual plants had already become senescent and unidentifiable. As will be discussed later in this report, a formal wetland delineation would need to be conducted to determine the extent of wetlands on the study area.

Animal species observed in the dryland agriculture are expected to use this habitat as well.

2.1.3 California Annual Grassland

California annual grassland habitat (approximately 5.36 acres) occurs at the edges of the dry-farmed agriculture areas. These areas do not appear to be disturbed by discing activities and are highly dominated by non-native annual grasses and forbs including wild oats (*Avena* sp.), ripgut brome (*Bromus diandrus*), serrated lettuce (*Lactuca serriola*), common fiddleneck, rose clover (*Trifolium hirtum*), and bellardia (*Bellardia trixago*).

The only animal species observed in this habitat was coyote (*Canis latrans*) dens, Botta's pocket gopher sign, and California ground squirrel burrows. Other animal species observed in the dryland agriculture are expected to use this habitat as well.

2.1.4 California Annual Grassland with a Significant Native Component

This habitat type was identified along the northern boundary of the site on a north-facing slope (approximately 0.80 acres). It appears that this area may have been temporarily disturbed when a berm was constructed along the outer edge of the Sand Creek riparian corridor along the study area boundary and was likely seeded with a mix of native bunchgrasses and forbs after the berm was constructed. Although this area is mostly dominated by annual species as described above for the California annual grassland habitat, there also was a significant native component present. Native grasses and forbs observed in this location included purple needlegrass (*Stipa pulchra*), creeping wild-rye (*Elymus triticoides*), lupine (*Lupinus* sp.), and California poppy (*Eschscholzia californica*).

Animal species observed in the dryland agriculture are expected to use this habitat as well.

2.1.5 California Annual Grassland (Disturbed)

Grasslands that have been significantly disturbed by discing, but don't appear to be part of the dry-farmed areas, occur in the southwestern portion of the site near Deer Valley Road (approximately 1.41 acres). This area supports ruderal vegetation that is adapted to such disturbance, including stinkwort (*Dittrichia graveolens*), black mustard, serrated lettuce and other non-native grasses and forbs previously described as occurring in the California annual grassland habitat.

Animal species observed in the dryland agriculture are expected to use this habitat as well.

2.1.6 California Sagebrush Scrub

A small amount of California sagebrush (*Artemisia californica*) scrub habitat (approximately 0.16 acres) occurs on the steep eastern bank of an unnamed tributary of Sand Creek. No other plant species were observed to be associated with the scrub habitat and the understory was mostly barren.

The only animal species observed in this habitat during the May 2021 site visit is the California ground squirrel. Other animal species observed in the dryland agriculture are expected to use this habitat as well.

2.1.7 Mixed Riparian Woodland

A small amount of mixed riparian habitat (approximately 0.29 acres) occurs along the southern banks of the unnamed tributary to Sand Creek. Woody riparian vegetation observed in this area included blue oak and valley oak (*Quercus douglasii* and *Q. lobata*), Fremont cottonwood (*Populus fremontii*), poison oak (*Toxicodendron diversilobum*), and almond (*Prunus dulcis*). California annual grassland habitat, as previously described, occurs in the riparian understory.

The only animal species observed in this habitat during the May 2021 site visit is the American kestrel (*Falco sparverius*) and California ground squirrel sign. Other animal species observed in the dryland agriculture are expected to use this habitat as well.

2.1.8 Sand Creek, Unnamed Tributary of Sand Creek, and Potential Wetlands

A portion of the Sand Creek channel and an unnamed tributary channel occur in the northwestern portion of the study area. These channels in the northern portion of the site had an approximate width between the tops of the banks of between 30 and 50 feet, and an Ordinary High Water width of approximately six to ten feet. In the western portion of the site, the unnamed tributary channel had an approximate top of bank width of eight to ten feet and OHW width of approximately two to three feet. These channels were completely dry at the time of the May 2021 survey. Vegetation observed within the channels was mostly dominated by broad-leaved pepperweed and black mustard, although wetland vegetation was observed within the channels that were just off site to the north. As indicated above, some woody riparian vegetation was associated with the southern banks of the unnamed tributary.

As described above, a large swale area occurs in the eastern portion of the site which appears to support a complex of small wetlands. Additionally, outside of this area, there were three discrete areas which also are potential wetlands. These three wetlands exhibited similar soils cracks and

vegetation as previously described for the potential wetlands within the wetland complex area. A formal wetland delineation would be necessary to determine the extent of these wetlands.

Animal species observed in off-site areas of Sand Creek which have potential to move onto the site include the cliff swallow (*Petrochelidon pyrrhonota*) and red-winged blackbird (*Agelaius phoeniceus*). Other animal species observed in the dryland agriculture are expected to use this habitat as well.

2.2 MOVEMENT CORRIDORS

Landscape linkages are defined as “areas that allow for the movement of species from one area of suitable habitat to another. A linkage can vary from a narrow strip of habitat that only functions as a conduit for movement (i.e., a corridor) or a large area of intact habitat that is used for movement, dispersal, and other life functions such as foraging and breeding”. Many wildlife linkages are broad areas of regional movement corridors for wildlife that generally includes a wide swath of land used for movement between two or more core areas for multiple regional species.

Habitat corridors are vital to terrestrial animals for connectivity between core habitat areas (i.e., larger intact habitat areas where species make their living). Connections between two or more core habitat areas help ensure that genetic diversity is maintained, thereby diminishing the probability of inbreeding depression and geographic extinctions.

The quality of habitat within the corridors is important. In general, “better” habitat has less human interference (e.g., roads, homes, etc.) and is more desirable to more species than areas with sparse vegetation and high-density roads. Movement corridors in California are typically associated with valleys, rivers and creeks supporting riparian vegetation, and ridgelines. With increasing encroachment of humans on wildlife habitats, it has become important to establish and maintain linkages, or movement corridors, for animals to be able to access locations containing different biotic resources that are essential to maintaining their life cycles.

Healthy riparian areas (supporting structural diversity, i.e., understory species to saplings to mature riparian trees) not only support a rich and diverse wildlife community but have also been

shown to facilitate regional wildlife movement. Riparian areas can vary from tributaries winding through scrubland to densely vegetated riparian forests.

Beier and Loe (1992) noted five functions of corridors (rather than physical traits) that are relevant when conducting an analysis regarding the value of linkages. The following five functions should be used to evaluate the suitability of a given tract of land for use as a habitat corridor:

1. Wide ranging mammals can migrate and find mates;
2. Plants can propagate within the corridor and beyond;
3. Genetic integrity can be maintained;
4. Animals can use the corridor in response to environmental changes or a catastrophic event;
5. Individuals can recolonize areas where local extinctions have occurred.

A corridor is “wide enough” when it meets these functions for the suite of animals in the area. It is important to note that landscape linkages are used differently by different species. For instance, medium to large mammals (or some bird species) may traverse a corridor in a matter of minutes or hours, while smaller mammals or other species may take a longer period of time to move through the same corridor (e.g., measured in days, weeks and even years). For example, an individual cougar may traverse the entire length of a long narrow corridor in an hour while travel of smaller species (such as rodent or rabbit species) may best be measured as gene flow within regional populations. These examples demonstrate that landscape linkages are not simply highways that animals use to move back and forth. While linkages may serve this purpose, they also allow for slower or more infrequent movement. Width and length must be considered in evaluating the value of a landscape linkage. A long narrow corridor would most likely only be useful to wide ranging animals such as cougars and coyotes when moving between core habitat areas.

To the extent practicable, conservation of linkages should address the needs of “passage species” (those species that typically use a corridor for the express purpose of moving from one intact area to another) *and* “corridor dwellers” (slow moving species such as plants and some amphibians and reptiles that require days or generations to move through the corridor).

The project site is under intense agricultural use (i.e., predominantly dry farmed) with Sand Creek running along its northern boundary. Deer Valley Road borders the project site on its west, with Highway 4 occurring about a mile from its eastern boundary. Dense residential development occurs 0.75 miles to the north, 0.6 miles to the southeast and approximately one mile to the east. A development is under construction 0.25 miles to the north. Given that this site sits on the western edge of existing developing in Antioch, movement of wildlife across the broader landscape of the site is somewhat diminished. While birds, rodents and small to medium carnivores are likely to access the site for foraging, some of which would move across the site to forage on similar habitats on immediately adjacent parcels. The most predominate feature on site that would facilitate movement of local wildlife would be Sand Creek.

2.3 SPECIAL STATUS PLANTS AND ANIMALS

Several species of plants and animals within the state of California have low populations, limited distributions, or both. Such species may be considered “rare” and are vulnerable to extirpation as the state’s human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described more fully in Section 3.2, state and federal laws have provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formally designated as threatened or endangered under state and federal endangered species legislation. Others have been designated as “candidates” for such listing. Still others have been designated as “species of special concern” by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists of native plants considered rare, threatened, or endangered (CNPS 2001). Collectively, these plants and animals are referred to as “special status species.”

A number of special status plants and animals occur in the vicinity of the project site. These species, and their potential to occur in the project site, are listed in Table 2. Sources of information for this table included *California Natural Diversity Data Base* (CDFW 2021), *Listed Plants* and *Listed Animals* (USFWS 2021), *State and Federally Listed Endangered and Threatened Animals of California* (CDFW 2021), *The California Native Plant Society’s Inventory of Rare and Endangered*

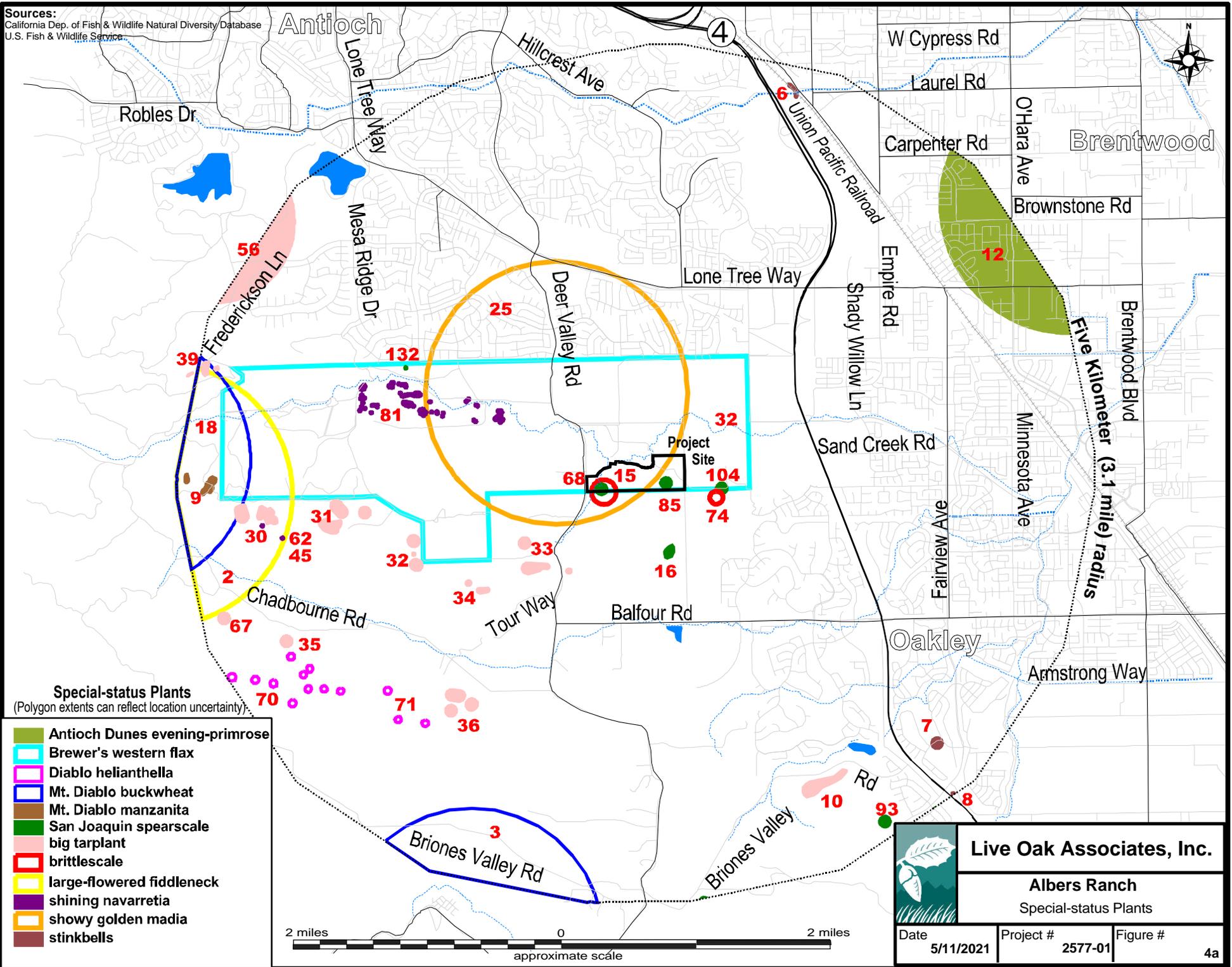
Vascular Plants of California (CNPS 2021), *California Bird Species of Special Concern* (Shuford and Gardall 2008), and *California Amphibian and Reptile Species of Special Concern* (Thompson et al. 2016). This information was used to evaluate the potential for special status plant and animal species that occur on the site. Figures 4a through 4c depict the locations of observations of special status plants and wildlife documented in the California Natural Diversity Data Base (CNDDB).

A search of published accounts for all of the relevant special status plant and animal species was conducted for the Antioch South USGS 7.5-minute quadrangle in which the project site occurs, and for the eight surrounding quadrangles (Honker Bay, Antioch North, Jersey Island, Clayton, Brentwood, Diablo, Tassajara, Byron Hot Springs) using the CNDDB Rarefind5. All species listed as occurring in these quadrangles on CNPS Lists 1A, 1B, 2, or 4 were also reviewed (Table 2).

Serpentine soils are absent from the site; as such, those species that are uniquely adapted to serpentine soils in the project's vicinity are considered absent from the site. Several other special status plant species have been ruled out on the site as they occur in habitats not present in the project site (e.g., vernal pool, coastal dunes, coastal scrub, chaparral, broad leafed forest, coastal prairie, cismontane woodland, etc.) or at elevations significantly below or above elevations of the site (approximately 55 to 87 meters NGVD).

Special status plant and animal species having potential to occur on the project site or immediate vicinity because suitable habitats are present are discussed further below.

Sources:
 California Dep. of Fish & Wildlife Natural Diversity Database
 U.S. Fish & Wildlife Service



Special-status Plants
 (Polygon extents can reflect location uncertainty)

- Antioch Dunes evening-primrose
- Brewer's western flax
- Diablo helianthella
- Mt. Diablo buckwheat
- Mt. Diablo manzanita
- San Joaquin sparscale
- big tarplant
- brittlescale
- large-flowered fiddleneck
- shining navarretia
- showy golden madia
- stinkbells

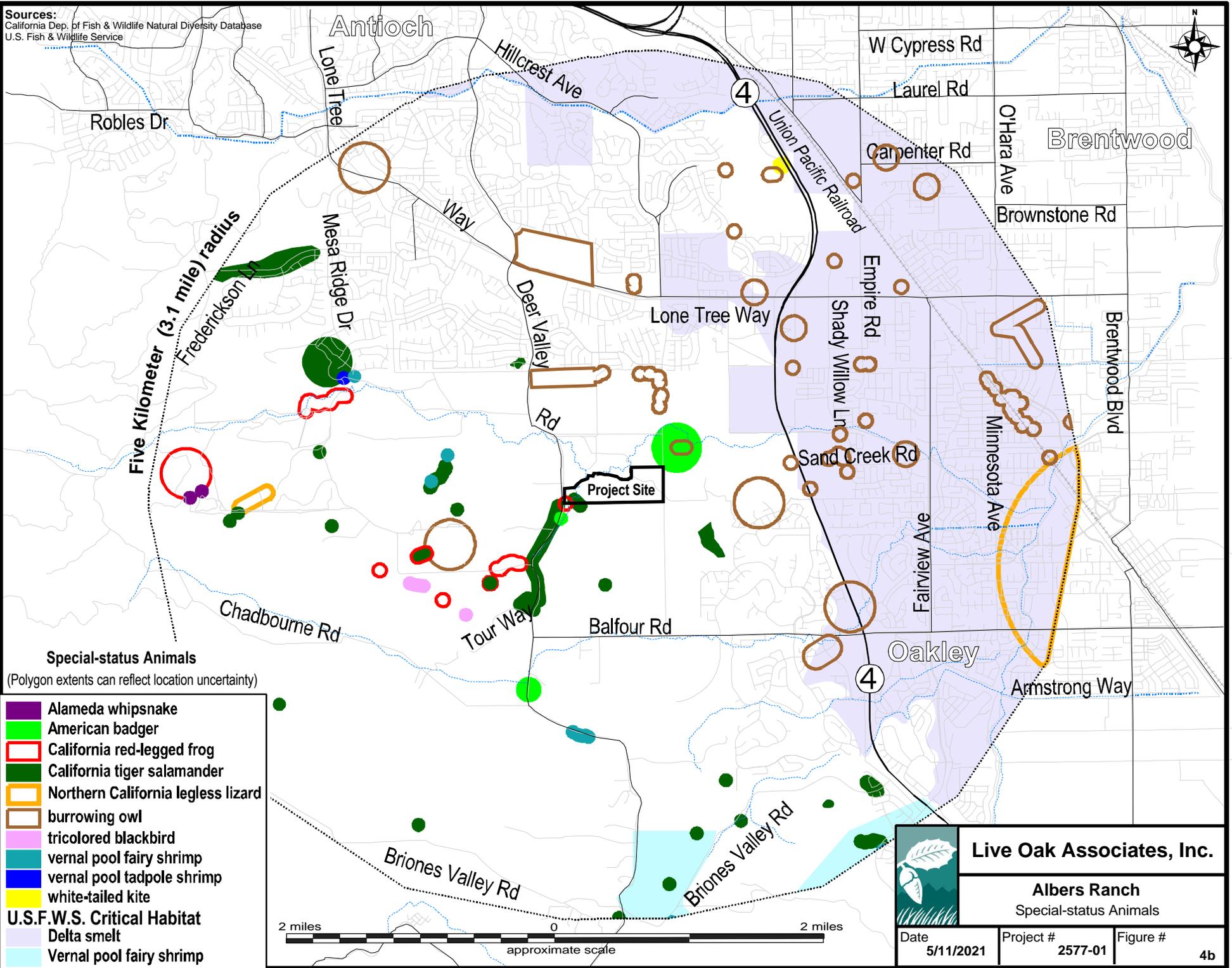


Live Oak Associates, Inc.

Albers Ranch
 Special-status Plants

Date	Project #	Figure #
5/11/2021	2577-01	4a

Sources:
 California Dep. of Fish & Wildlife Natural Diversity Database
 U.S. Fish & Wildlife Service



Special-status Animals

(Polygon extents can reflect location uncertainty)

- Alameda whipsnake
- American badger
- California red-legged frog
- California tiger salamander
- Northern California legless lizard
- burrowing owl
- tricolored blackbird
- vernal pool fairy shrimp
- vernal pool tadpole shrimp
- white-tailed kite

U.S.F.W.S. Critical Habitat

- Delta smelt
- Vernal pool fairy shrimp



Live Oak Associates, Inc.

Albers Ranch
 Special-status Animals

Date	Project #	Figure #
5/11/2021	2577-01	4b

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS (adapted from CDFW 2021 and CNPS 2021)

Threatened and Endangered Plants

Species	Status	Habitat	Occurrence in the Project Site
Large-flowered fiddleneck <i>Amsinckia grandiflora</i>	FE, CE, CRPR 1B	<u>Habitat</u> : Cismontane woodlands and valley and foothill grasslands. <u>Elevation</u> : 275-550 meters. <u>Blooms</u> : April-May <u>Lifeform</u> : Annual herb	Unlikely. Upland habitats of the site have been heavily disturbed by agricultural practices for many decades. The closest known occurrence is approximately 2.5 miles west of the study area and was last observed in 1887 (Occurrence #2).
Contra Costa goldfields <i>Lasthenia conjugens</i>	FE, CRPR 1B	<u>Habitat</u> : Alkaline soils in mesic valley and foothill grasslands and vernal pools. <u>Elevation</u> : 0-470 meters. <u>Blooms</u> : March-June <u>Lifeform</u> : Annual herb	Possible. Wetlands on the site may provide suitable habitat for this species although these wetlands have been heavily disturbed by agricultural practices for many decades.

PLANTS (adapted from CDFW 2021 and CNPS 2021)

Other plant species listed by CNPS

Species	Status	Habitat	Occurrence in the Project Site
California androsace <i>Androsace elongata</i>	CRPR 4.2	<u>Habitat</u> : Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper, and valley and foothill grassland. <u>Elevation</u> : 150-1200 meters. <u>Blooms</u> : March-June <u>Lifeform</u> : Annual herb	Unlikely. Only very limited and marginal habitat occur within the riparian and scrub habitat of the study area for this species.
Slender silver moss <i>Anomobryum julaceum</i>	CRPR 2	<u>Habitat</u> : Damp rock and soil outcrops usually on roadcuts found in broadleaved upland forest, lower montane coniferous forest, and north coast coniferous forest <u>Elevation</u> : 100-1000 meters. <u>Blooming period</u> : N/A <u>Lifeform</u> : Moss	Absent. Suitable habitat for this species is absent from the study area.
Mt. Diablo manzanita <i>Arctostaphylos auriculata</i>	CRPR 1B	<u>Habitat</u> : Chaparral (sandstone) and cismontane woodland un canyons and on slopes. <u>Elevation</u> : 135-440 meters. <u>Blooming period</u> : January-March <u>Lifeform</u> : Perennial evergreen shrub	Absent. No manzanita shrubs were observed on the study area during the May 2021 survey.

Species	Status	Habitat	Occurrence in the Project Site
Contra Costa manzanita <i>Arctostaphylos manzanita ssp. laevigata</i>	CRPR 1B	<u>Habitat</u> : Chaparral especially on rocky slopes. <u>Elevation</u> : 430-1410 meters. <u>Blooming period</u> : January-March <u>Lifeform</u> : Perennial evergreen shrub	Absent. No manzanita shrubs were observed on the study area during the May 2021 survey.
Alkali milk-vetch <i>Astragalus tener var. tener</i>	CRPR 1B	<u>Habitat</u> : Occurs in alkaline soils in valley and foothill grassland and in vernal pools. <u>Elevation</u> : 1-60 meters. <u>Blooms</u> : March-June <u>Lifeform</u> : Annual herb	Possible. Wetlands on the site may provide suitable habitat for this species although these wetlands have been heavily disturbed by agricultural practices for many decades.
Heartscale <i>Atriplex cordulata</i>	CRPR 1B	<u>Habitat</u> : Saline or alkaline soils of chenopod scrub, meadows and seeps, and sandy valley and foothill grassland. <u>Elevation</u> : 0-560 meters. <u>Blooms</u> : April-October <u>Lifeform</u> : Annual herb	Possible. Wetlands on the site may provide suitable habitat for this species although these wetlands have been heavily disturbed by agricultural practices for many decades.
Brittlescale <i>Atriplex depressa</i>	CRPR 1B	<u>Habitat</u> : Alkaline clay soils in chenopod scrub, meadows and seeps, playas, valley and foothill grasslands, and vernal pools. <u>Elevation</u> : 1-320 meters. <u>Blooms</u> : April-October <u>Lifeform</u> : Annual herb;	Possible. Wetlands on the site may provide suitable habitat for this species although these wetlands have been heavily disturbed by agricultural practices for many decades.
Lesser saltscale <i>Atriplex minuscula</i>	CRPR 1B	<u>Habitat</u> : Occurs in alkaline and sandy soils in chenopod scrub, playas, and valley and foothill grasslands. <u>Elevation</u> : 15-200 meters <u>Blooms</u> : May-October <u>Lifeform</u> : Annual herb	Possible. Wetlands on the site may provide suitable habitat for this species although these wetlands have been heavily disturbed by agricultural practices for many decades.
Big tarplant <i>Blepharizonia plumosa</i>	CRPR 1B	<u>Habitats</u> : Valley and foothill grassland, usually on clay soil. <u>Elevation</u> : 30-505 meters. <u>Blooms</u> : July-October <u>Lifeform</u> : Annual herb	Unlikely. Although there are several occurrences of this species to the west and southwest of the study area, potential habitat for this species would be limited to the small amount of grassland habitat occurring at the edges of the cultivated wheat fields.
Mt. Diablo fairy lantern <i>Calochortus pulchellus</i>	CRPR 1B	<u>Habitat</u> : Chaparral, cismontane woodland, riparian woodland, and valley and foothill grasslands. <u>Elevation</u> : 30-840 meters. <u>Blooms</u> : April- June <u>Lifeform</u> : Perennial herb	Unlikely. Although there are several occurrences of this species to the west and southwest of the study area, potential habitat for this species would be limited to the small amount of grassland habitat occurring at the edges of the cultivated wheat fields.

Species	Status	Habitat	Occurrence in the Project Site
Congdon's tarplant <i>Centromadia parryi ssp. congdonii</i>	CRPR 1B	<u>Habitat</u> : Occurs on valley and foothill grasslands on alkaline soils. <u>Elevation</u> : 0-230 meters. <u>Blooms</u> : May-November <u>Lifeform</u> : Annual herb	Unlikely. While alkaline soils are present on the site and while wetlands and grasslands at the edges of the cultivated wheat fields could provide marginal potential habitat for this species, there are no known occurrences within a three-mile radius of the study area.
Hispid salty bird's-beak <i>Chloropyron molle ssp. hispidum</i>	CRPR 1B	<u>Habitats</u> : Occurs in alkaline soils in meadows and seeps, playas, and valley and foothill grassland. <u>Elevation</u> : 1-155 meters. <u>Blooms</u> : June-September. <u>Lifeform</u> : Annual herb	Unlikely. While wetlands on the site may provide marginally suitable habitat for this species, there are no known occurrences of this species within a three-mile radius of the site.
Hospital Canyon larkspur <i>Delphinium californicum ssp. interius</i>	CRPR 1B	<u>Habitats</u> : Chaparral (openings), cismontane woodland (mesic), coastal scrub. <u>Elevation</u> : 195-635 meters <u>Blooms</u> : April-June <u>Lifeform</u> : Perennial herb	Unlikely. Habitat is extremely limited on the site for this species, the study area is well below the elevation range for this species, and there are no known occurrences within a three-mile radius of the study area.
Recurved larkspur <i>Delphinium recurvatum</i>	CRPR 1B	<u>Habitat</u> : Chenopod scrub, cismontane woodland, and valley and foothill grasslands. <u>Elevation</u> : 3-750 meters. <u>Blooms</u> : March-June. <u>Lifeform</u> : Perennial herb	Unlikely. Habitat is extremely limited on the site for this species and there are no known occurrences within a three-mile radius of the study area.
Dwarf downingia <i>Downingia pusilla</i>	CRPR 2B	<u>Habitats</u> : Valley and foothills grassland (mesic); vernal pools <u>Elevation</u> : 1-445 meters <u>Blooms</u> : March-May <u>Lifeform</u> : Annual herb	Possible. Wetlands on the site may provide suitable habitat for this species although these wetlands have been heavily disturbed by agricultural practices for many decades.
Lime Ridge eriastrum <i>Eriastrum etterae</i>	CRPR 1B	<u>Habitats</u> : Chaparral (openings or edges) in alkaline or semi alkaline, sandy soils <u>Elevation</u> : 200-655 meters <u>Blooms</u> : June-July <u>Lifeform</u> : Annual herb	Unlikely. Habitat is extremely limited on the site for this species, the study area is well below the elevation range for this species, and there are no known occurrences within a three-mile radius of the study area.
Antioch Dunes buckwheat <i>Eriogonum nudum var. psychicola</i>	CRPR 1B	<u>Habitats</u> : Inland dunes <u>Elevation</u> : 0-20 meters <u>Blooms</u> : July-October <u>Lifeform</u> : Perennial Herb	Absent. Suitable habitat is absent from the study area for this species.
Mt. Diablo buckwheat <i>Eriogonum truncatum</i>	CRPR 1B	<u>Habitat</u> : Occurs in chaparral, coastal scrub, and valley and foothill grasslands. <u>Elevation</u> : 3-350 meters. <u>Blooms</u> : April-December <u>Lifeform</u> : Annual herb	Unlikely. Habitat is extremely limited on the site for this species, the study area is well below the elevation range for this species, and there are no known occurrences within a three-mile radius of the study area.

Species	Status	Habitat	Occurrence in the Project Site
Jepson's coyote-thistle <i>Eryngium jepsonii</i>	CRPR 1B	<u>Habitats</u> : Occurs in valley and foothill grassland and vernal pools. <u>Elevation</u> : 3-300 meters. <u>Blooms</u> : April-August <u>Lifeform</u> : Perennial herb	Possible. Wetlands on the site may provide suitable habitat for this species although these wetlands have been heavily disturbed by agricultural practices for many decades.
Contra Costa wallflower <i>Erysimum capitatum</i> var. <i>angustatum</i>	CRPR 1B	<u>Habitats</u> : Inland Dunes <u>Elevation</u> : 3-20 meters <u>Blooms</u> : March-July <u>Lifeform</u> : Perennial herb	Absent. Suitable habitat is absent from the study area for this species.
Diamond-petaled California poppy <i>Eschscholzia rhombipetala</i>	CRPR 1B	<u>Habitat</u> : Occurs in valley and foothill grassland with alkali and clay soils. <u>Elevation</u> : 0-975 meters. <u>Blooms</u> : March-April <u>Lifeform</u> : Annual herb.	Unlikely. Habitat is extremely limited on the site for this species, the study area is well below the elevation range for this species, and there are no known occurrences within a three-mile radius of the study area.
San Joaquin spearscale <i>Extriplex joaquinana</i>	CRPR 1B	<u>Habitat</u> : Occurs in chenopod scrub, meadows and seeps, playas, and valley and foothill grasslands on alkaline soils. <u>Elevation</u> : 1-835 meters. <u>Blooms</u> : April-October <u>Lifeform</u> : Annual herb	Possible. This species was documented on the site on both banks of the unnamed tributary in the western portion of the site in 1989 (Occurrence #15) and in 2005 one plant was observed near the southeastern boundary of the study area (Occurrence #85). Alkaline wetlands and also alkaline grasslands at the edges of the cultivated wheat fields provide potential habitat for this species.
Stinkbells <i>Fritillaria agrestis</i>	CRPR 4.2	<u>Habitats</u> : Occurs in chaparral, valley grassland, foothill woodland, wetland, and riparian habitats, and can be associated with serpentine soils. <u>Elevation</u> : 10-1555 meters. <u>Blooms</u> : Mar-Jun <u>Lifeform</u> : Perennial herb	Unlikely. Habitats of the study area are extremely marginal for this species and serpentine soils are absent. The closest documented occurrence is almost three miles west of the site (Occurrence #9).
Toren's grimmia <i>Grimmia torenii</i>	CRPR 1B	<u>Habitats</u> : Occurs in openings, rock outcrops, boulders, rock walls, carbonate, and volcanic areas in chaparral, cismontane woodland, and lower montane coniferous forests <u>Elevation</u> : 325-1160 meters <u>Blooms</u> : N/A <u>Lifeform</u> : Moss	Absent. Suitable habitat is absent from the study area for this species.
Diablo helianthella <i>Helianthella castanea</i>	CRPR 1B	<u>Habitat</u> : Occurs in cismontane woodland, coastal scrub, chaparral, riparian woodland and broadleaved upland forest. <u>Elevation</u> : 60-1300 meters. <u>Blooms</u> : March-June <u>Lifeform</u> : Perennial herb	Absent. This perennial species would have been observed if present during the May 2021 survey and it was not observed.

Species	Status	Habitat	Occurrence in the Project Site
Brewer's western flax <i>Hesperolinon breweri</i>	CRPR 1B	<u>Habitat:</u> Usually occurs on serpentine soils of chaparral, cismontane woodland, and valley and foothill grassland. <u>Elevation:</u> 30-900 meters. <u>Blooms:</u> May-July. <u>Lifeform:</u> Annual herb	Absent. Serpentine soils are absent from the site.
Showy golden madia <i>Madia radiata</i>	CRPAR 1B	<u>Habitat:</u> Cismontane woodland; valley and foothill grassland <u>Elevation:</u> 25-1215 meters <u>Blooms:</u> March-May <u>Lifeform:</u> Annual herb	Unlikely. Habitats of the study area are extremely marginal for this species and limited to the small amount of undisturbed grasslands at the margins of the wheat fields.
Hall's bush-mallow <i>Malcothamnus hallii</i>	CRPR 1B	<u>Habitat:</u> Chaparral and coastal scrub <u>Elevation:</u> 10-760 meters <u>Blooms:</u> April-October <u>Lifeform:</u> Perennial evergreen shrub	Absent. This perennial shrub would have been identifiable if present during the May 2021 survey and it was not observed.
Lime Ridge navarretia <i>Navarretia gowenii</i>	CRPR 1B	<u>Habitat:</u> Chaparral <u>Elevation:</u> 108-305 meters <u>Blooms:</u> May-June <u>Lifeform:</u> Annual herb	Absent. Suitable habitat is absent from the study area for this species.
Shining navarretia <i>Navarretia nigelliformis ssp. radians</i>	CRPR 1B	<u>Habitat:</u> Occurs in cismontane woodlands, valley and foothill grasslands, and vernal pools. <u>Elevation:</u> 76-1000 meters. <u>Blooms:</u> April-July <u>Lifeform:</u> Annual herb;	Possible. Wetlands on the site may provide suitable habitat for this species although these wetlands have been heavily disturbed by agricultural practices for many decades.
Antioch Dunes evening-primrose <i>Oenothera deltooides ssp. howellii</i>	CRPR 1B	<u>Habitat:</u> Inland dunes <u>Elevation:</u> 0-30 meters <u>Blooms:</u> March-September <u>Lifeform:</u> Perennial herb	Absent. Suitable habitat is absent from the study area for this species.
Mt. Diablo phacelia <i>Phacelia phaceliodes</i>	CRPR 1B	<u>Habitat:</u> Chaparral and cismontane woodland; rocky soils <u>Elevation:</u> 500-1370 meters <u>Blooms:</u> April-May <u>Lifeform:</u> Annual herb	Absent. Suitable habitat is absent from the study area for this species.
Bearded popcornflower <i>Plagiobothrys hystriculus</i>	CRPR 1B	<u>Habitat:</u> Often in vernal swales. Also found in vernal pool margins and in mesic valley and foothill grassland <u>Elevation:</u> 0-274 meters <u>Blooms:</u> April-May <u>Lifeform:</u> Annual herb	Possible. Wetlands on the site may provide suitable habitat for this species although these wetlands have been heavily disturbed by agricultural practices for many decades.
California alkali grass <i>Puccinellia simplex</i>	CRPR 1B	<u>Habitat:</u> Occurs in alkaline, vernal mesic, sinks, flats, and lake margins within chenopod scrub, meadows and seeps, valley and foothill grasslands, and vernal pools. <u>Elevation:</u> 2-930 meters. <u>Blooms:</u> March-May <u>Lifeform:</u> Annual grass	Possible. Wetlands on the site may provide suitable habitat for this species although these wetlands have been heavily disturbed by agricultural practices for many decades.

Species	Status	Habitat	Occurrence in the Project Site
Rock sanicle <i>Sanicula saxatilis</i>	CRPR 1B	<u>Habitat:</u> Rocky, scree, and talus in broadleaved upland forest, chaparral, and valley and foothill grassland <u>Elevation:</u> 620-1175 meters <u>Blooms:</u> April-May <u>Lifeform:</u> Perennial herb	Absent. No suitable habitat occurs in the study area for this species.
Chaparral ragwort <i>Senecio aphanactis</i>	CRPR 2B	<u>Habitat:</u> Sometimes in alkaline soils; chaparral, cismontane woodland and coastal scrub <u>Elevation:</u> 15-800 meters <u>Blooms:</u> January-May <u>Lifeform:</u> Annual herb	Absent. No suitable habitat occurs in the study area for this species.
Long-styled sand-spurrey <i>Spergularia macrotheca var. longistyla</i>	CRPR 1B	<u>Habitat:</u> Occurs in alkaline meadows and seeps and marshes and swamps. <u>Elevation:</u> 0-255 meters. <u>Blooms:</u> February-May <u>Lifeform:</u> Perennial herb	Possible. Wetlands on the site may provide suitable habitat for this species although these wetlands have been heavily disturbed by agricultural practices for many decades.
Keck's checkerbloom <i>Sidalcea keckii</i>	CRPR 1B	<u>Habitat:</u> Serpentine and clay soils in cismontane woodland and valley and foothill grassland <u>Elevation:</u> 75-650 meters <u>Blooms:</u> April-June <u>Lifeform:</u> Annual herb	Absent. No suitable habitat occurs in the study area for this species.
Mt. Diablo jewel-flower <i>Streptanthus hispidus</i>	CRPR 1B	<u>Habitat:</u> Occurs in rocky areas of chaparral and valley and foothill grasslands. <u>Elevation:</u> 365-1200 meters. <u>Blooms:</u> March-June <u>Lifeform:</u> Annual herb;	Absent. No suitable habitat occurs in the study area for this species.
Coastal triquetrella <i>Triquetrella californica</i>	CRPR 1B	<u>Habitat:</u> Coastal bluff scrub and coastal scrub <u>Elevation:</u> 10-100 meters <u>Blooms:</u> N/A <u>Lifeform:</u> Moss	Absent. No suitable habitat occurs in the study area for this species.
Caper-fruited tropidocarpum <i>Tropidocarpum capparideum</i>	CRPR 1A	<u>Habitat:</u> Occurs in alkaline soils of valley and foothill grassland. <u>Elevation:</u> 1-455 meters. <u>Blooms:</u> March-April <u>Lifeform:</u> Annual herb	Unlikely. Habitats of the study area are extremely marginal for this species and limited to the small amount of undisturbed grasslands at the margins of the wheat fields. Additionally, this species was last observed in the region in the late 1800's and early 1900's.
Oval-leaved Viburnum <i>Viburnum ellipticum</i>	CRPR 2B	<u>Habitat:</u> Chaparral, cismontane woodland, and lower montane coniferous forest <u>Elevation:</u> 215-1400 meters <u>Blooms:</u> May-June <u>Lifeform:</u> Perennial deciduous shrub	Absent. No suitable habitat occurs in the study area for this species.

ANIMALS (Continued adapted from CDFW 2021 and USFWS 2021)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	Occurrence in the Project Site
Lange’s metalmark butterfly <i>Apodemia mormo langei</i>	FE	Occurs in riverbank sand dunes supporting its host plant <i>Eriogonum nudum</i> var. <i>auriculatum</i> .	Absent. The site does not support suitable habitat for this species additionally, the host plant was not observed during the 2021 site visit. This species occurs on the Antioch Dunes.
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	FE	Occurs in large, deep vernal pools and lakes of California with water into June at elevations from 5 to 145 meters.	Unlikely. Although a seasonal wetland complex in the eastern portion of the site is potentially capable of supporting vernal pool branchiopods, this species has not been documented in Contra Costa County. The nearest documented occurrence of this species is more than eight miles north of the site in Solano County.
Longhorn fairy shrimp <i>Branchinecta longiantenna</i>	FE	Occurs in ephemeral wetlands and vernal pools of California.	Unlikely. Although a seasonal wetland complex in the eastern portion of the site is potentially capable of supporting vernal pool branchiopods, the site occurs several miles beyond the northern end of this species’ range.
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT	Occurs in vernal pools of California.	Possible. A seasonal wetland complex in the eastern portion of the site is potentially capable of supporting vernal pool branchiopods. This species is known to occur in the region, with the nearest documented observation located approximately one mile west of the site.
Vernal pool tadpole shrimp <i>Lepidurus packardi</i>	FE	Occurs in vernal pools of California. Vernal pools and swales in the Sacramento Valley containing clear to highly turbid water.	Possible. A seasonal wetland complex in the eastern portion of the site is potentially capable of supporting vernal pool branchiopods. This species is known to occur in the region, with the nearest documented observation located approximately two miles northwest of the site.
Steelhead - Central Valley DPS <i>Oncorhynchus mykiss irideus</i>	FT	Spawn in freshwater rivers or streams in the spring and spend the remainder of their life in the ocean.	Absent. Steelhead are not known to occur within this reach of Sand Creek. Additionally, there is no recorded occurrences within three miles of the site.
Longfin smelt <i>Spirinchus thaleichthys</i>	CT, CSC	Anadromous. In California, occurs in Sacramento-San Joaquin estuary and one record from Monterey Bay. Spawns in sandy to gravely substrates near the ocean November to June; some populations are landlocked.	Absent. Longfin smelt are not known to occur within this reach of Sand Creek. Additionally, there is no recorded occurrences within three miles of the site.

Species	Status	Habitat	Occurrence in the Project Site
California tiger salamander (CTS) <i>Ambystoma californiense</i>	FT/CT	Breeds in vernal pools and stock ponds of central California; adults aestivate in grassland habitats adjacent to the breeding sites.	Possible. CTS are known to previously occur within the tributary of Sand Creek at the southwestern corner of the site.
Foothill yellow-legged frog (FYLF) <i>Rana boylei</i>	CE/CSC	Occurs in swiftly flowing streams and rivers with rocky substrate with open, sunny banks in forest, chaparral, and woodland habitats, and can sometimes be found in isolated pools.	Absent. Habitat onsite is not suitable for the FYLF, additionally, FYLF are not known to occur within three miles of the site.
California red-legged frog (CRLF) <i>Rana aurora draytonii</i>	FT/CSC	Rivers, creeks and stock ponds of the Sierra foothills and Bay Area, preferring pools with overhanging vegetation.	Possible. CRLF are known to previously occur within the tributary of Sand Creek at the southwestern corner of the site.
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	FT, CT	Occurs in chaparral foothills, shrublands with scattered grass patches, rocky canyons, and watercourses. Occurs in the San Francisco Bay area including Alameda, Contra Costa, Santa Clara and San Joaquin Counties, CA.	Absent. Suitable habitat for this species is absent from the site.
San Joaquin whipsnake <i>Masticophis flagellum ruddocki</i>	CSC	Open, dry habitats with little or no tree cover. Found in valley grasslands and saltbush scrub in the San Joaquin Valley.	Absent. The site is not within the range of the San Joaquin whipsnake.
Giant garter snake <i>Thamnophis gigas</i>	FT, CT	Habitat requirements consist of (1) adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter.	Absent. The site is not within the range of the giant garter snake.
American peregrine falcon <i>Falco peregrines anatum</i>	CP	Individuals breed on cliffs in the Sierra or in coastal habitats; occurs in many habitats of the state during migration and winter.	Absent. Suitable habitat for this species is absent from the site and this species is not known to occur within three miles of the site.

Species	Status	Habitat	Occurrence in the Project Site
California least tern <i>Sterna antillarum browni</i>	FE, CE, CP	Occurs in central to southern California April to November. Found in and near coastal habitat including coasts, beaches, bays, estuaries, lagoons, lakes, and rivers.	Absent. Although this species may fly over the site during migration, suitable foraging and breeding habitat are absent from the site.
Bank swallow <i>Riparia riparia</i>	CT	Occurs in open areas near flowing water, nests in steep banks along inland water or coast. State-wide.	Absent. Suitable habitat for this species is absent from the site.
Tricolored blackbird <i>Agelaius tricolor</i>	CSC/ CT	Breeds near fresh water in dense emergent vegetation.	Unlikely. Although suitable nesting habitat appears to be present within the wetland area of Sand Creek to the north of the site, this species is unlikely to nest on the site itself. The nearest documented observation of this species is more than a mile from the site.
Swainson’s hawk (SWHA) <i>Buteo swainsoni</i>	CT	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	Possible. Trees along the margins of the site are potentially suitable for SWHA nesting and the remainder of the site is suitable foraging habitat for this species. There have been 30 documented sightings within a ten-mile radius of the project site (Figure 4c) with the closest being within a quarter mile of the site. Therefore, Swainson’s hawks may occur onsite.
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	FE, CT	Frequents desert alkali scrub and annual grasslands and may forage in adjacent agricultural habitats. Utilizes enlarged (4 to 10 inches in diameter) ground squirrel burrows as denning habitat.	Unlikely. No San Joaquin kit fox burrows were observed on the site during the field survey in 2021, but an extensive burrow survey was not conducted. There were 18 documented sightings within a ten-mile radius of the project site with records ranging from 1973-1996 (Figure 4c). Thus, there has not been any record of kit fox within the Sand Creek area for more than 25 years. The site has been highly modified for agricultural use and, as a result, provides only marginal foraging and dispersal habitat for the kit fox.

ANIMALS (adapted from CDFW 2021 and USFWS 2021)

State Species of Special Concern and Protected Species

Species	Status	Habitat	Occurrence in the Project Site
Sacramento perch <i>Archoplites interruptus</i>	CSC	Occurs in sloughs, slow-moving rivers, and large lakes. They are not known from their historic range, and most known locations are locations where this species has been planted. Less than 25 populations are known (CDFW species accounts).	Absent. Sacramento perch are not known to occur within this reach of Sand Creek. Additionally, there is no recorded occurrences within three miles of the site.

Species	Status	Habitat	Occurrence in the Project Site
California glossy snake <i>Arizona elegans occidentalis</i>	CSC	Occurs in arid areas with grassland, scrub, chaparral, and rocky washes. This species is nocturnal and spends the day in burrows.	Absent. Habitats required by this species is absent from the site. Additionally, the nearest recorded observation of this species is more than three miles from the site.
Northern California legless lizard <i>Anniella pulchra</i>	CSC	The NCLL (previously called black legless lizard) occurs mostly underground in warm moist areas with loose soil and substrate. The NCLL occurs in habitats including sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks.	Absent. Habitats required by northern California legless lizards are absent from the site, as the site lacks sandy soils. Additionally, the nearest documented observation of this species is approximately 2.5 miles from the site.
Coast horned lizard <i>Phrynosoma blainvillii</i>	CSC	Occurs in grasslands, scrublands, oak woodlands, etc. of central California. Common in sandy washes with scattered shrubs.	Unlikely. Habitats required by coast horned lizards are only marginally suitable, as the site lacks sandy soils. The nearest documented observation of this species is approximately two miles to the south of the site.
Western pond turtle (WPT) <i>Actinemys marmorata</i>	CSC	Intermittent and permanent waterways including streams, marshes, rivers, ponds and lakes. Open slow-moving water of rivers and creeks of central California with rocks and logs for basking.	Possible. Sand Creek and the tributary of Sand Creek occurring on the site does not support water year-round, however it appears wetlands exist adjacent to the site, therefore, WPT could move onto the site from time to time, especially during wet periods. The nearest recorded observation of this species is more than three miles from the site.
White-tailed kite (WTK) <i>Elanus leucurus</i>	CP	Open grasslands and agricultural areas throughout central California.	Possible. Trees along the margins of the site provide potentially suitable nesting habitat and the remainder of the site is suitable foraging habitat for the WTK. The nearest recorded observation of this species is approximately 2.5 miles from the site.
Northern harrier <i>Circus cyaneus</i>	CSC	Frequents meadows, grasslands, open rangelands, freshwater emergent wetlands; uncommon in wooded habitats.	Possible. Suitable habitat for this species occurs onsite.
Golden eagle (GE) <i>Aquila chrysaetos</i>	CP	Typically frequents rolling foothills, mountain areas, sage-juniper flats and desert.	Possible. Although suitable breeding habitat for the golden eagle is absent from the site, foraging habitat exists onsite. The nearest documented occurrence of the GE is more than three miles from the site.

Species	Status	Habitat	Occurrence in the Project Site
Burrowing owl (BUOW) <i>Athene cunicularia</i>	CSC	Found in open, dry grasslands, deserts and ruderal areas. Requires suitable burrows. This species is often associated with California ground squirrels.	Possible. Suitable habitat is present onsite and adjacent to the site in the form of ground squirrel burrows. The nearest documented occurrence of BUOW is within a quarter mile from the site.
Short-eared owl <i>Asio flammeus</i>	CSC	Occur in wide open spaces including marshes, open shrublands, grassland, prairie, and agricultural field habitats, and need dense ground cover to conceal nests.	Possible. Suitable habitat for short-eared owls occurs on the site. However, they have not been recorded within three miles of the site.
Loggerhead shrike (LOSH) <i>Lanius ludovicianus</i>	CSC	Frequents open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low herbaceous cover. Nests in tall shrubs and dense trees. Forages in grasslands, marshes, and ruderal habitats. Can often be found in cropland.	Possible. Suitable breeding and foraging habitat exist along the margins of the site in the form of shrubs.
Yellow-breasted chat (YBC) <i>Icteria virens</i>	CSC	Frequently breeds in dense shrubs and blackberry thickets and uses areas of dense vegetation during migration.	Unlikely. Although dense vegetation suitable for nesting occurs nearly adjacent to the site, it is absent from the site, therefore, although this species may occur within the local vicinity, it is unlikely to occur onsite.
California yellow warbler <i>Dendroica petechia brewsteri</i>	CSC	Migrants move through many habitats of Sierra and its foothills. This species breeds in riparian thickets of alder, willow and cottonwoods.	Unlikely. Although dense vegetation suitable for nesting occurs nearly adjacent to the site, it is absent from the site, therefore, although this species may occur within the local vicinity, it is unlikely to occur onsite.
Grasshopper sparrow <i>Ammodramus savannarum</i>	CSC	Occurs in California during spring and summer in open grasslands with scattered shrubs.	Possible. Suitable breeding habitat is marginal onsite. The nearest documented occurrence is more than three miles from the site.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	CSC	Primarily a cave-dwelling bat that may also roost in buildings. Occurs in a variety of habitats.	Possible. Although suitable foraging habitat occurs onsite, suitable roosting habitat is absent from the site.
Pallid bat <i>Antrozous pallidus</i>	CSC	Grasslands, chaparral, woodlands, and forests; most common in dry rocky open areas providing roosting opportunities.	Possible. Although suitable foraging habitat occurs onsite, suitable roosting habitat is absent from the site.
Western red bat <i>Lasiurus blossevillii</i>	CSC	Roosts in tree or shrub foliage, although will occasionally use caves.	Possible. Trees with foliage thick enough for roosting western red bats is absent from the site, however, this species may be expected to forage over the site.
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	CSC	Found in hardwood forests, oak riparian and shrub habitats.	Absent. Woodrat nests were not observed during the 2021 survey.

Species	Status	Habitat	Occurrence in the Project Site
American badger <i>Taxidea taxus</i>	CSC	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils, specifically grassland environments. Natal dens occur on slopes.	Possible. Suitable habitat for badgers occurs on the site and in the vicinity of the site. The nearest recorded observation of this species is adjacent to the site.

***Explanation of Occurrence Designations and Status Codes**

- Present: Species observed on the site at time of field surveys or during recent past.
- Likely: Species not observed on the site, but it may reasonably be expected to occur there on a regular basis.
- Possible: Species not observed on the site, but it could occur there from time to time.
- Unlikely: Species not observed on the site, and would not be expected to occur there except, perhaps, as a transient.
- Absent: Species not observed on the site, and precluded from occurring there because habitat requirements not met.

STATUS CODES

- | | | | |
|------|---|-----|---|
| FE | Federally Endangered | CE | California Endangered |
| FT | Federally Threatened | CT | California Threatened |
| FPE | Federally Endangered (Proposed) | CR | California Rare |
| FC | Federal Candidate | CP | California Protected |
| CSC | California Species of Special Concern | CCE | California Candidate Endangered |
| CNPS | California Native Plant Society Listing | | |
| 1A | Plants Presumed Extinct in California | 3 | Plants about which we need more information – a review list |
| 1B | Plants Rare, Threatened, or Endangered in California and elsewhere | 4 | Plants of limited distribution – a watch list |
| 2 | Plants Rare, Threatened, or Endangered in California, but more common elsewhere | | |

2.4 JURISDICTIONAL WATERS

Jurisdictional waters include rivers, creeks, and drainages that have a defined bed and bank and which, at the very least, carry ephemeral flows. Jurisdictional waters also include lakes, ponds, reservoirs, and wetlands. Such waters may be subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE), CDFW, and the Regional Water Quality Control Board (RWQCB). See Section 3.2.5 of this report for additional information. A portion of Sand Creek and a tributary of Sand Creek exist in the western portion of the site. In addition to the channels, a fairly extensive wetland complex is present at the lower elevations of the eastern portion of the site in an area proposed for development, and there are also three potential wetlands occurring outside of the wetland complex. See Section 3.3.14 of this report for a more detailed discussion.

3 IMPACTS AND MITIGATIONS

3.1 SIGNIFICANCE CRITERIA

General plans, area plans, and specific projects are subject to the provisions of the California Environmental Quality Act. The purpose of CEQA is to assess the impacts of proposed projects on the environment before they are constructed. For example, site development may require the removal of some or all of its existing vegetation. Animals associated with this vegetation could be destroyed or displaced. Animals adapted to humans, roads, buildings, pets, etc., may replace those species formerly occurring on a site. Plants and animals that are state and/or federally listed as threatened or endangered may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed. These impacts may be considered significant. According to *2019 CEQA Status and Guidelines (2019)*, “Significant effect on the environment” means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest. Specific project impacts to biological resources may be considered “significant” if they will:

- 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 Service;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

3.2 RELEVANT GOALS, POLICIES, AND LAWS

3.2.1 Threatened and Endangered Species

State and federal “endangered species” legislation has provided the CDFW and USFWS with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Species listed as threatened or endangered under provisions of the state and federal Endangered Species Acts, candidate species for such listing, state species of special concern, and some plants listed as endangered by the California Native Plant Society are collectively referred to as “species of special status.” Permits may be required from both the CDFW and USFWS if activities associated with a proposed project will result in the take of a listed species. To “take” a listed species, as defined by the state of California, is “to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill” said species (California Fish and Game Code, Section 86). “Take” is more broadly defined by the federal Endangered Species Act to include “harm” of a listed species (16 USC, Section 1532(19), 50 CFR, Section 17.3). Furthermore, the CDFW and the USFWS are responding agencies under CEQA. Both agencies review CEQA documents in order to determine the adequacy of their treatment of endangered species issues and to make project-specific recommendations for their conservation.

3.2.2 Migratory Birds

State and federal laws also protect most bird species. The State of California signed Assembly Bill 454 into law in 2019, which clarifies native bird protection and increases protections where California law previously deferred to Federal law. The Federal Migratory Bird Treaty Act (FMBTA: 16 U.S.C., scc. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

3.2.3 Birds of Prey

Birds of prey are protected in California under provisions of the State Fish and Game Code, Section 3503.5, which states that it is “unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “taking” by the CDFW.

Additionally, the Bald and Golden Eagle Protection Act (16 U.S.C., scc. 668-668c) prohibits anyone from taking bald or golden eagles, including their parts, nests, or eggs, unless authorized under a federal permit. The act prohibits any disturbance that directly affects an eagle or an active eagle nest as well as any disturbance caused by humans around a previously used nest site during a time when eagles are not present such that it agitates or bothers an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

3.2.4 Bats

Section 2000 and 4150 of the California Fish and Game Code states that it is unlawful to take or possess a number of species, including bats, without a license or permit, as required by Section 3007. Additionally, Title 14 of the California Code of Regulations states it is unlawful to harass, herd, or drive a number of species, including bats. To harass is defined as “an intentional act which disrupts an animal's normal behavior patterns, which includes, but is not limited to, breeding, feeding or sheltering.” For these reasons, bat colonies in particular are considered to be sensitive and therefore, disturbances that cause harm to bat colonies are unlawful.

3.2.5 Wetlands and Other “Jurisdictional Waters”

Jurisdictional waters include waters of the United States subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE) and waters of the State of California subject to the regulatory authority of the California Department of Fish and Wildlife (CDFW) and the California Regional Water Quality Control Board (RWQCB).

Clean Water Act, Section 404. The USACE regulates the filling or grading of Waters of the U.S. under the authority of Section 404 of the Clean Water Act. Drainage channels and adjacent wetlands may be considered “waters of the United States” or “jurisdictional waters” subject to the jurisdiction of the USACE. The extent of jurisdiction has been defined in the Code of Federal Regulations and clarified in federal courts.

The definition of waters of the U.S. have changed several times in recent years. In January 2020, the Environmental Protection Agency (EPA) and USACE jointly issued the Navigable Waters Protection Rule. The new rule was published in the Federal Register on April 21, 2020, and took effect on June 22, 2020.

The Navigable Waters Protection Rule (33 CFR §328.3(a)) defines waters of the U.S. as:

Territorial Seas and Traditional Navigable Waters (TNWs)

- The territorial seas and traditional navigable waters include large rivers and lakes and tidally influenced waterbodies used in interstate or foreign commerce.

Tributaries

- Tributaries include perennial and intermittent rivers and streams that contribute surface flow to traditional navigable waters in a typical year. These naturally occurring surface water channels must flow more often than just after a single precipitation event—that is, tributaries must be perennial or intermittent.
- Tributaries can connect to a traditional navigable water or territorial sea in a typical year either directly or through other “waters of the United States,” through channelized non-jurisdictional surface waters, through artificial features (including culverts and spillways), or through natural features (including debris piles and boulder fields).
- Ditches are to be considered tributaries only where they satisfy the flow conditions of the perennial and intermittent tributary definition and either were constructed in or relocate a tributary or were constructed in an adjacent wetland and contribute perennial or intermittent flow to a traditional navigable water in a typical year.

Lakes, Ponds, and Impoundments of Jurisdictional Waters

- Lakes, ponds, and impoundments of jurisdictional waters are jurisdictional where they contribute surface water flow to a traditional navigable water or territorial sea in a typical year either directly or through other waters of the United States, through channelized non-jurisdictional surface waters, through artificial features (including culverts and spillways), or through natural features (including debris piles and boulder fields).
- Lakes, ponds, and impoundments of jurisdictional waters are also jurisdictional where they are flooded by a water of the United States in a typical year, such as certain oxbow lakes that lie along the Mississippi River.

Adjacent Wetlands

- Wetlands that physically touch other jurisdictional waters are “adjacent wetlands.”
- Wetlands separated from a water of the United States by only a natural berm, bank or dune are also “adjacent.”
- Wetlands inundated by flooding from a water of the United States in a typical year are “adjacent.”
- Wetlands that are physically separated from a jurisdictional water by an artificial dike, barrier, or similar artificial structure are “adjacent” so long as that structure allows for a direct hydrologic surface connection between the wetlands and the jurisdictional water in a typical year, such as through a culvert, flood or tide gate, pump, or similar artificial feature.
- An adjacent wetland is jurisdictional in its entirety when a road or similar artificial structure divides the wetland, as long as the structure allows for a direct hydrologic surface connection through or over that structure in a typical year.

The Navigable Waters Protection Rule also outlines what do not constitute waters of the United States. The following waters/features are not jurisdictional under the rule:

- Waterbodies that are not included in the four categories of waters of the United States listed above.
- Groundwater, including groundwater drained through subsurface drainage systems, such as drains in agricultural lands.
- Ephemeral features, including ephemeral streams, swales, gullies, rills, and pools.
- Diffuse stormwater run-off and directional sheet flow over upland.
- Many farm and roadside ditches.

- Prior converted cropland retains its longstanding exclusion, but is defined for the first time in the final rule. The agencies are clarifying that this exclusion will cease to apply when cropland is abandoned (i.e., not used for, or in support of, agricultural purposes in the immediately preceding five years) and has reverted to wetlands.
- Artificially irrigated areas, including fields flooded for agricultural production, that would revert to upland should application of irrigation water to that area cease.
- Artificial lakes and ponds, including water storage reservoirs and farm, irrigation, stock watering, and log cleaning ponds, constructed or excavated in upland or in non-jurisdictional waters.
- Water-filled depressions constructed or excavated in upland or in non-jurisdictional waters incidental to mining or construction activity, and pits excavated in upland or in non-jurisdictional waters for the purpose of obtaining fill, sand, or gravel.
- Stormwater control features excavated or constructed in upland or in non-jurisdictional waters to convey, treat, infiltrate, or store stormwater run-off.
- Groundwater recharge, water reuse, and wastewater recycling structures, including detention, retention and infiltration basins and ponds, that are constructed in upland or in non-jurisdictional waters.
- Waste treatment systems have been excluded from the definition of waters of the United States since 1979 and will continue to be excluded under the final rule. Waste treatment systems include all components, including lagoons and treatment ponds (such as settling or cooling ponds), designed to either convey or retain, concentrate, settle, reduce, or remove pollutants, either actively or passively, from wastewater or stormwater prior to discharge (or eliminating any such discharge).

All activities that involve the discharge of dredge or fill material into waters of the U.S. are subject to the permit requirements of the USACE under Section 404 of the Clean Water Act. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued without a CWA Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards (Section 3.6.2).

Porter-Cologne Water Quality Act/Clean Water Act, Section 401. There are nine Regional Water Quality Control Boards statewide; collectively, they oversee regional and local water quality in California. The RWQCB administers Section 401 of the Clean Water Act and the Porter-Cologne

Water Quality Control Act. The RWQCB for a given region regulates discharges of fill or pollutants into waters of the State through the issuance of various permits and orders.

Pursuant to Section 401 of the Clean Water Act, the RWQCB regulates waters of the State that are also waters of the U.S. Discharges into such waters require a Section 401 Water Quality Certification from the RWQCB as a condition to obtaining certain federal permits, such as a Clean Water Act Section 404 permit (Section 3.6.1). Discharges into all Waters of the State, even those that are not also Waters of the U.S., require Waste Discharge Requirements (WDRs), or a waiver of WDRs, from the RWQCB.

The Porter-Cologne Water Quality Control Act, Water Code Section 13260, requires that “any person discharging waste, or proposing to discharge waste, within any region that could affect the ‘waters of the State’ to file a report of discharge” with the RWQCB. Waters of the State as defined in the Porter-Cologne Act (Water Code Section 13050[e]) are “any surface water or groundwater, including saline waters, within the boundaries of the state.” This gives the RWQCB authority to regulate a broader set of waters than the Clean Water Act alone; specifically, in addition to regulating waters of the U.S. through the Section 401 Water Quality Certification process, the RWQCB also claims jurisdiction and exercises discretionary authority over “isolated waters,” or waters that are not themselves waters of the U.S. and are not hydrologically connected to waters of the U.S.

The RWQCB also administers the Construction Stormwater Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one or more acres of soil must obtain a Construction General Permit under the Construction Stormwater Program. A prerequisite for this permit is the development of a Stormwater Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, stormwater, or other pollutants into a Water of the U.S. may require a NPDES permit.

California Department of Fish and Game Code, Section 1602. The CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the

diversion or obstruction of their natural flow, change or use of any material from their bed or bank, or the deposition of debris require a Notification of Lake or Streambed Alteration. If the CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

3.2.6 City of Antioch Tree Preservation Ordinance

The City of Antioch has a tree ordinance (Chapter 5, Article 12, Section 9-5.12.05 of the City's Zoning Ordinance "Tree Preservation and Regulation"), which stipulates that tree removal is evaluated as part of the development application process for proposed projects. The ordinance breaks down trees that are proposed for removal into six different categories for purposes of determining the appropriate number of replacement trees that will be required:

- An "established" tree is any tree that is at least ten inches in diameter at breast height (DBH), measured 4.5 feet above natural or finished grade.
- An "indigenous tree" is a naturally growing tree of the following species: Blue Oak (*Quercus douglasii*), Valley Oak (*Quercus lobata*), Coast Live Oak (*Quercus agrifolia*), Canyon Live Oak (*Quercus chrysolepis*), Interior Live Oak (*Quercus wislizenii*), California Buckeye (*Aesculus californica*), and California Bay (*Umbellularia californica*).
- A "landmark tree" is any tree that is at least 48 inches in DBH and/or is over 40 feet in height.
 - A mature tree is any tree that is at least 26 inches in DBH.
- A street tree is any tree planted within a public right-of-way and/or a tree planting easement.
- A "protected tree" is any tree required to be preserved as a condition of an approval from a regular development application.

The tree ordinance requires that any tree approved for removal will be replaced. Requirements for replacement trees includes two 24-inch box trees for each "established" tree, two 48-inch box trees for each "mature" tree, and the City Council has discretion in determining the appropriate ratio of box tree replacements for any "landmark" or "indigenous" trees.

Several trees occur on the site that would be considered “established” and/or “indigenous” trees including blue and valley oaks.

3.3 IMPACTS SPECIFIC TO THE PROJECT

Based on the Vesting Tentative Map for the Albers Property (CBG Engineers 2021) the majority of the site would be developed into a 288 single-family home subdivision, roads and assisted living development in the western portion of the site near Deer Valley Road. The remainder of the site would include approximately 40 acres of open space, approximately seven acres of water quality facilities including detention basins, and a 1.5-acre park. As discussed above, activities resulting in impacts to biotic resources may be regulated by local, state, and federal laws. The natural resource issues specific to this project are discussed in detail below.

3.3.1 Potential Project Impacts to Special Status Plants

Potential Impact. Most special status plant species known to occur, or to once have occurred, in the project region are considered absent from the site due to the absence of suitable habitat for these species, including the absence of serpentine soils, marshes and swamps, and inland dunes; or because the species is a perennial shrub or herb that would have been observed if present during the May 2021 site survey. Several other special status plant species are considered unlikely to occur on the site because habitats of the site are extremely limited (such as grasslands occurring at the margins of the wheat fields) or extremely marginal (due to decades of agricultural disturbance, etc.) for these species, and/or the species may not be known to occur in the project vicinity (i.e., within a three-mile radius), and/or the species has not been observed in many decades in the project region.

Soils of the study area are alkaline, and grasslands occurring at the edges of the wheat fields on alkaline soils, and/or wetlands occurring on alkaline soils, may provide potential habitat for several special status plant species including Contra Costa goldfields (*Lasthenia conjugens*), alkali milk-vetch (*Astragalus tener* var. *tener*), heartscale (*Atriplex cordulata*), brittlescale (*Atriplex depressa*), lesser saltscale (*Atriplex minuscula*), dwarf downingia (*Downingia pusilla*), Jepson’s coyote-thistle (*Eryngium jepsonii*), shining navarretia (*Navarretia nigelliformis* ssp. *radians*), bearded popcornflower (*Plagiobothrys hystriculus*), California alkali grass (*Puccinellia simplex*), and long-

styled sand-spurrey (*Spergularia macrotheca* var. *longistyla*). Additionally, one other special status plant, San Joaquin spearscale (*Extriplex joaquinana*), has actually been observed on the site in two different locations in the past.

Focused floristic surveys during the appropriate blooming season in all potentially suitable habitats for these species would be necessary to determine whether the proposed project would impact any populations of these species. Should focused surveys determine populations of any of these species are present on the site, and if the project as proposed would impact these populations, this could be considered a potentially significant impact of the project.

3.3.2 Loss of Habitat for Special Status Animals

Potential Impact. Thirty-seven special status animal species occur, or once occurred, regionally (see Table 2). Of these, 21 species would be absent or unlikely to occur on the site due to a lack of suitable habitat for these species. The species that would be absent or unlikely to occur include the Lange's metalmark butterfly, Conservancy fairy shrimp, longhorn fairy shrimp, steelhead, longfin smelt, foothill yellow-legged frog, Sacramento perch, California glossy snake, northern California legless lizard, coast horned lizard, Alameda whipsnake, San Joaquin whipsnake, giant garter snake, American peregrine falcon, California least tern, bank swallow, yellow-breasted chat, California yellow warbler, tricolored blackbird, San Francisco dusky-footed woodrat, and San Joaquin kit fox.

The remaining 17 special status animal species from Table 2 potentially occur more frequently as potential foragers or transients, may be resident to the site, or may occur within areas adjacent to the site. These include vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, California red-legged frog, western pond turtle, Swainson's hawk, white-tailed kite, northern harrier, golden eagle, burrowing owl, short-eared owl, loggerhead shrike, grasshopper sparrow, Townsend's big-eared bat, pallid bat, western red bat, and American badger.

No evidence of bats was observed during reconnaissance surveys, and onsite trees do not support suitable roosting habitat for bats, therefore, these species are expected to only forage on the site and do not require preconstruction surveys or other mitigation measures.

The loss of agricultural habitat, which does not contain regionally important habitat for the above-mentioned listed species, will not result in a significant loss of habitat for the species listed in Table 2.

The project does have the potential to result in an impact to construction-related injury or mortality of nesting migratory birds and raptors, vernal pool fairy shrimp, vernal pool tadpole shrimp, California tiger salamander, California red-legged frog, western pond turtle, Swainson's hawk, white-tailed kite, northern harrier, golden eagle, burrowing owl, short-eared owl, loggerhead shrike, grasshopper sparrow, American badger, and San Joaquin kit fox as discussed below in Sections 3.3.5 through 3.3.13.

Mitigation. No mitigation warranted.

3.3.3 Loss of Habitat for Native Wildlife

Potential Impact. The habitats of the site comprise only a small portion of the regionally available habitat for plant and animal species that are expected to use the habitat. The proposed project would result in the loss of agricultural habitat. This is not expected to result in a significant loss of habitat for local wildlife. Therefore, impacts due to the loss of habitats for native wildlife resulting from the proposed project are considered less-than-significant.

Mitigation. No mitigation would be warranted for the loss of habitat for native wildlife.

3.3.4 Interference with the Movement of Native Wildlife

Potential Impact. The development of the site as currently planned would not constrain native wildlife movement. Most wildlife using the adjacent Sand Creek as a local movement corridor would likely continue to use it in the same manner after site development.

Mitigation. No mitigation warranted.

3.3.5 Potential Impacts to Nesting Migratory Birds Including Nesting Raptors and Protected Birds

Potential Impacts. Trees and ground on the project site and the riparian habitat adjacent to Sand Creek may support nesting birds and raptors. Buildout of the project during the nesting period for migratory birds (i.e., typically between February 1 to August 31), including initial site grading, soil excavation, and/or tree and vegetation removal, poses a risk of nest abandonment and death of any live eggs or young that may be present in nests within or near the site. Such an effect would be considered a significant impact. To ensure that any active nests will not be disturbed, and individual birds will not be harmed by construction activities, the following measures should be followed.

3.3.6 Potential Impacts to Listed Fairy Shrimp

Potential Impacts. The site has potential to support vernal pool fairy shrimp and vernal pool tadpole shrimp, as a seasonal wetland complex in the eastern portion of the site that is potentially capable of supporting vernal pool branchiopods. To ensure these species will not be disturbed, and individuals will not be harmed by construction activities, the following measures should be followed.

3.3.7 Potential Impacts to California Tiger Salamander

Potential Impacts. Sand Creek, a tributary of Sand Creek, and the seasonal wetlands on and adjacent to the site support potentially suitable breeding habitat. Impacts to individual CTS or to known breeding pools would be considered a significant impact. To ensure that CTS will not be harmed by construction activities, the following measures should be followed.

3.3.8 Potential Impacts to California Red-Legged Frogs

Potential Impacts. Potentially suitable upland habitat for the California red-legged frog (CRLF) is present within the project site in the form of riparian habitat associated with Sand Creek as well as the tributary of Sand Creek on the western side of the project site; currently impacts are not expected to occur within Sand Creek. CRLF may also be expected to move out of the riparian area onto the upland portion of the site from time to time as well. Injury or mortality of an individual CRLF would be considered a significant impact to CRLF under CEQA.

3.3.9 Potential Impacts to Western Pond Turtles

Potential Impacts. The proposed project would result in the loss of a small area of upland habitat for western pond turtles. Impacts to WPT habitat would be considered minimal. However, it is possible that WPT would move into the construction zone, which may result in mortality to individual western pond turtles. The loss of these individuals would constitute a significant impact under CEQA.

3.3.10 Potential Impacts to Swainson's Hawk

Potential Impacts. Trees along the margins of the site support potentially suitable nesting habitat and the remainder of the site supports foraging habitat for the SWHA. There have been 30 documented sightings within a ten-mile radius of the project site (Figure 4c) with the closest being within a quarter mile of the site. Therefore, as SWHA is known to nest and forage within the area, they have some potential to occur onsite which may result in mortality to individual SWHA. The loss of these individuals would constitute a significant impact under CEQA.

3.3.11 Potential Impacts to Golden Eagle

Potential Impacts. Although nesting habitat is absent from the site and golden eagles are not known to nest within three miles of the site, should, in the future, a golden eagle nest occur within a half-mile of the site and be within line of site from the site, particular construction activities has the small potential to impact an active nest. The project would not result in a significant loss of foraging habitat for the golden eagle. An impact to an active golden eagle nest would constitute a significant impact under CEQA.

3.3.12 Potential Impacts to Western Burrowing Owls

Potential Impacts. The site supports potentially suitable habitat for burrowing owls in the form of ground squirrel burrows. Should site demolition or grading occur during the nesting season for this species (February 1 through August 31), nests and nestlings that may be present would likely be destroyed. Overwintering burrowing owls may also be buried in their roost burrows outside of the nesting season (September 1 through January 31). Any actions related to site development that result in the mortality of burrowing owls would constitute a violation of the federal Migratory

Bird Treaty Act and provisions of the California Fish and Game Code and would constitute a significant impact under CEQA.

3.3.13 Potential Impacts to American Badgers

Potential Impacts. Suitable habitat for American badgers occurs on the site. Additionally, they have been observed adjacent to the site. The site may be used by badgers for movement, foraging, and breeding. No badgers or badger burrows were observed on the project site during the May 2021 survey; however, should badgers occur onsite at the time of construction, the project could result in mortality of individuals of this species, which would constitute a significant impact under CEQA.

3.3.14 Potential Impacts to San Joaquin Kit Fox

Potential Impacts. The site supports marginal habitat for the San Joaquin kit fox as it has been highly modified for agricultural use (e.g., dryland farmed) and the site sits on the western edge of development in this region of Antioch. While an extensive survey for burrows was not completed, no suitable burrows were detected nor would we expect to find any given site conditions and the fact that kit fox have not been observed in the region for more than 25 years. Therefore, the site supports only marginal foraging and dispersal habitat for the kit fox. Therefore, development of the site would result in a less than significant loss of foraging or dispersal habitat for the kit fox.

While unlikely that a kit fox would ever occur on site, if they did prior to construction, site development might harm or injury an individual kit fox. This would result in a significant impact to individual kit foxes.

3.3.15 Potential Impacts to Riparian Habitat and Other Sensitive Natural Communities, Including Federally and State Protected Wetlands

Potential Impacts. Jurisdictional waters of the U.S. and state under the jurisdiction of the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB) and the California Department of Fish and Wildlife (CDFW) are present on the site in the form of Sand Creek and its unnamed tributary, which occur in the northern and western portions of the site. The limits of USACE jurisdiction would be the Ordinary High Water mark on opposing banks and the limits of jurisdiction of the CDFW and RWQCB would be the top of the bank or the dripline of

woody riparian vegetation, which is ever is greater. A small amount of mixed riparian woodland is present along the southern bank of both channels near the site's northern boundary as previously described in this report. As currently proposed, the project would avoid impacts to the channels and associated riparian habitat as they would be preserved within designated open space (Parcel Y). However, an emergency vehicle access (EVA) road is proposed from Deer Valley Road at the western boundary of the site that would traverse across an area between two segments of the unnamed channel. Depending on the design of the EVA road, its construction could result in temporary or minor permanent impacts to the channel. The project does not currently propose any storm drains into either channel. Should the construction of the EVA road or should the project be revised to include impacts such as storm drain outfalls into the channels on the site, these impacts may be considered significant and may also require permits from the regulatory agencies (see Regulatory Considerations in the section below). A formal wetland delineation would be required to be prepared and submitted to the USACE for a Jurisdictional Determination to determine the extent of the jurisdictional status of the channels.

In addition to the channels, a fairly extensive wetland complex is present at the lower elevations of the eastern portion of the site in an area proposed for development, and there are also three potential wetlands occurring outside of the wetland complex. These wetlands appear to be isolated from other waters of the U.S. and therefore may not be considered jurisdictional by the USACE, however, they likely would be considered jurisdictional by the RWQCB. Project impacts to these wetlands would be considered a significant impact of the project.

3.3.16 Degradation of Water Quality in Seasonal Drainages, Stock Ponds and Downstream Waters

Potential Impact. Eventual site development and construction may require grading that leaves the soil of construction zones barren of vegetation and, therefore, vulnerable to sheet, rill, or gully erosion. Eroded soil is generally carried as sediment in surface runoff to be deposited in natural creek beds, canals, and adjacent wetlands. Furthermore, urban runoff is often polluted with grease, oil, pesticide and herbicide residues, heavy metals, etc. These pollutants may eventually be carried to sensitive wetland habitats used by a diversity of native wildlife species. The deposition of pollutants and sediments in sensitive riparian and wetland habitats would be

considered a potentially significant adverse environmental impact. The project would comply with the City of Antioch's grading requirements. Therefore, the project buildout would result in a less-than-significant impact to water quality.

Mitigation. No mitigation is warranted.

3.3.17 Conflict with Local Policies and Ordinances: City of Antioch Tree Ordinance

Potential Impacts. The City of Antioch has a tree ordinance. A tree inventory was not conducted by an arborist for this site; however, trees exist on the site which may require a permit from the city to remove. If any trees are planned to be removed, the loss of ordinance-sized trees without further compliance with the City's tree policies would constitute a significant adverse impact of the project.

3.3.18 Conflict with Habitat Conservation Plans

The proposed project is not within any HCP or NCCP.

3.4 MITIGATION MEASURES

3.4.1 Special-Status Plants

I: Prior to initiation of ground-disturbing activities on the project site and off-site improvement areas, the project applicant shall retain a qualified biologist to conduct focused botanical surveys for Contra Costa goldfields, alkali milk-vetch, heartscale, brittlescale, lesser saltscale, dwarf downingia, Jepson's coyote-thistle, shining navarretia, bearded popcornflower, California alkali grass, long-styled sand spurrey, San Joaquin spearscale, and all plants that are considered locally rare as listed in the East Bay Chapter of the CNPS Database of Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties for the Marsh Creek/Lone Tree Valley area. Focused botanical survey will be conducted consistent with the CNPS survey protocol (CNPS 1983, revised 2001, or the most current CNPS survey protocol) and the CDFW recommended protocols for botanical resource surveys (CDFW 2018, or the most recent CDFW protocol). These protocols include surveying areas providing potential habitat on foot in such a way as to provide 100% visual coverage of the area in all appropriate blooming seasons. Project construction shall not be initiated until all special-status plant surveys are completed and the mitigation is implemented, if

necessary and required prior to starting construction. A special-status plant survey report that includes the methods used, survey participants, and associated findings shall be prepared and submitted to the City no more than 30 days following the completion of the final site visit. A record of any special-status plant species identified within the project site during the preconstruction surveys shall be submitted to the CNDDDB. If new special-status plant populations are not found on the site during the appropriately timed surveys, additional mitigation is not required. If construction is not started within two years after the rare plant surveys are completed, the city may require additional rare plant surveys.

If special-status plants are observed on the site during the survey, the populations shall be avoided to the maximum degree possible during project development, and a Mitigation and Monitoring Plan (MMP) shall be prepared detailing the measures to be implemented to avoid any retained plant populations. The MMP shall include establishment of appropriate buffers during construction, fencing of the population prior to and during construction, and regular monitoring of the preserved population by a biologist during and after construction activities. The MMP shall be implemented prior to the initiation of project grading.

If plant populations cannot be fully avoided, the applicant shall hire a qualified biologist to prepare an on-site or off-site MMP in coordination with the City of Antioch to reduce impacts to the identified special-status plant populations to a less-than-significant level, subject to review and approval by the City of Antioch Community Development Department. At a minimum, the MMP will include:

- Location of suitable on-site or off-site areas to establish new populations.
- Means by which established populations will be conserved in-perpetuity.
- Methods of site preparation, seed/plant procurement, and plant establishment.

A monitoring plan that includes the length of monitoring (typically at least five years), monitoring interval (typically annually), interim and final success criteria, and an adaptive management plan to describe measures that will be taken in the case that interim or final success criteria goals are not met.

3.4.2 Nesting Migratory Birds Including Nesting Raptors and Protected Birds

II(a): If initial site disturbance activities, including tree, shrub, or vegetation removal, are to occur during the breeding season (typically February 1 to August 31), a qualified biologist would conduct pre-construction surveys for nesting migratory birds and raptors. The survey for nesting migratory birds would cover the project site itself, and the survey for nesting raptors would encompass the site and surrounding lands within 250 feet, where accessible. The survey should occur within 14 days prior to the onset of ground disturbance. If a nesting migratory bird were to be detected, an appropriate construction-free buffer would be established. Actual size of buffer, which would be determined by the project biologist, would depend on species, topography, and type of activity that would occur in the vicinity of the nest. The project buffer would be monitored periodically by the project biologist to ensure compliance. After the nesting is completed, as determined by the biologist, the buffer would no longer be required.

II(b): All workers on the project site shall attend a tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if an active bird nest is observed.

3.4.3 Listed Fairy Shrimp

III(a): If avoidance of potential fairy shrimp habitat is not possible, mitigation for the loss of fairy shrimp habitat should be a combination of preserving occupied and potentially occupied habitat at a 3:1 ratio (preserved:impacted) and creating additional habitat at a 2:1 ratio (created:impacted). Preservation or created habitat shall be via the purchase of mitigation land in fee title or via recordation of a conservation easement to be preserved in perpetuity. Preservation and creation of suitable habitat shall include the development of a Habitat Mitigation and Management Plan (HMMP) which will outline the requirements for managing preserved areas and created areas as well as success criteria for the created habitat. Fairy shrimp habitat shall be established at least a year prior to onsite impacts to fairy shrimp habitat in order to monitor the new habitat's effectiveness, including a comparison to the existing onsite habitat with regards to appropriate hydrology for fairy shrimp.

Once it has been determined the created habitat supports the appropriate hydrology, the top four inches of topsoil of the onsite habitat planned to be impacted and transferred to the mitigation site in the same day. Removal and placement of this topsoil shall be done in a systematic fashion that will avoid compaction of the soil.

III(b): The HMMP will provide methodology for monitoring the both the preserved and created fairy shrimp habitat for five years and will also provide success criteria. The HMMP will follow the guidelines for mitigation and monitoring of vernal pools issued by the USFWS (1994).

III(c): All workers on the project site shall attend a tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if a listed fairy shrimp is observed.

III(d): As an alternative to completion of this mitigation measure, the project applicant could comply with one of the following conditions:

1. Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or
2. Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the city, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.

3.4.4 California Tiger Salamander

IV(a): During the rainy season, the seasonal wetlands in the eastern portion of the site shall be assessed to determine whether they could be classified as breeding habitat for the CTS. All other potential breeding areas (Sand Creek and the tributary of Sand Creek) are not being impacted.

IV(b): If all potential CTS breeding areas cannot be avoided will be avoided, compensation for loss of breeding habitat at a ratio of 3:1 and compensation for loss of upland habitat at a ratio of 3:1 will be required. Preservation or created habitat shall be via the purchase of mitigation land in fee

title, via recordation of a conservation easement to be preserved in perpetuity, or by purchasing credits at a mitigation bank.

IV(c): Pre-construction surveys should be conducted to ensure that CTS are absent from the construction area. If CTS are present, they should be relocated by a qualified biologist.

IV(d): All workers on the project site shall attend a tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if a California tiger salamander is observed.

IV(e): Regulatory issues. If breeding habitat is planned to be removed, in addition to evaluating the potential of the project to affect the CTS under CEQA, the applicant would need to comply with provisions of the federal Endangered Species Act and would need to seek take authorization from the USFWS for project-related losses as required by law. To obtain a take permit, consultation with the U.S. Fish and Wildlife Service would need to be initiated either through a federal nexus (i.e., Section 7 consultation, usually through the USACE or the Bureau of Land Management) or through the HCP process (i.e., Section 10 consultation).

IV(f): As an alternative to completion of this mitigation measure, the project applicant could comply with one of the following conditions:

1. Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or
2. Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.

3.4.5 California Red-Legged Frog

V(a): Prior to the start of construction, an approved qualified biologist should train all construction personnel regarding habitat sensitivity, identification of special status species, and required practices.

V(b): Pre-construction surveys should be conducted to ensure that CRLF are absent from the construction area. If CRLF are present, they should be relocated by a qualified biologist.

V(c): The construction zone should be cleared, and silt fencing should be erected and maintained around construction zones to prevent CRLF from moving into these areas.

V(d): A biological monitor should be present onsite during particular times of construction to ensure no CRLF are harmed, injured, or killed during project buildout.

V(e): Upland habitats should be managed via a long-term management plan to maintain the quality of the habitat for the movement and dispersal of CRLF. Potential opportunities include enhancement of the channels and riparian corridor (e.g., formation of plunge pools) would also maximize opportunities for CRLF to disperse from the ponds to even higher-quality habitat off-site.

V(f): All workers on the project site shall attend a tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if a California red-legged frog is observed.

V(g): *Regulatory issues.* At this time breeding habitat is not planned to be impacted, however, if at a later time, breeding habitat is planned to be removed, in addition to evaluating the potential of the project to affect the CRLF under CEQA, the applicant would need to comply with provisions of the federal Endangered Species Act and would need to seek take authorization from the USFWS for project-related losses as required by law. To obtain a take permit, consultation with the U.S. Fish and Wildlife Service would need to be initiated either through a federal nexus (i.e., Section 7 consultation, usually through the USACE or the Bureau of Land Management) or through the HCP process (i.e., Section 10 consultation).

V(h): As an alternative to completion of this mitigation measure, the project applicant could comply with one of the following conditions:

1. Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written “Conditions of Coverage” by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or
2. Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.

3.4.6 Western Pond Turtle

VI(a): Implementation of the measures for the CRLF (see mitigation measure V above) would adequately address impacts to western pond turtles. Should a western pond turtle be observed onsite, it shall be allowed to leave the site on its own or be relocated by a CDFW-approved biologist. Should a western pond turtle nest site be observed, a 50-foot construction-free buffer shall be established and maintained until a qualified biologist determines the nest is no longer active.

VI(b): All workers on the project site shall attend a tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if a western pond turtle is observed.

3.4.7 Swainson’s Hawk

VII(a): During the nesting season prior to the construction on the project site within a half-mile of a potential nest tree, preconstruction surveys shall be conducted within the construction zones and adjacent lands to identify any nesting pairs of Swainson’s hawks. These surveys will conform to the guidelines of CDFW as presented in *RECOMMENDED TIMING AND METHODOLOGY FOR SWAINSON’S HAWK NESTING SURVEYS IN CALIFORNIA’S CENTRAL VALLEY*, Swainson’s Hawk Technical Advisory Committee, May 31, 2000. No preconstruction surveys are required for construction activity located farther than a half-mile from a potential nest tree.

VII(b): Should any active nests be discovered in or near proposed construction zones, the qualified biologist shall establish a suitable construction-free buffer around the nest. This buffer shall be identified on the ground with flagging or fencing and shall be maintained until the biologist has determined that the young have fledged.

VII(c): All workers on the construction of the Project Site shall attend tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if a Swainson's hawk is observed on or near the construction zone.

VII(d): As an alternative to completion of this mitigation measure, the project applicant could comply with one of the following conditions:

1. Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or
2. Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.

3.4.8 Golden Eagle

VIII(a): Preconstruction surveys for golden eagle nests would be conducted concurrently with preconstruction surveys for Swainson's hawk nests. Should an active golden eagle nest be observed within a half-mile of the site and be within the line of site from the site, biological monitors would monitor the nest in order to establish baseline behavioral data. Based on the baseline behavioral data and location in the nest (i.e., whether the nest is remote or in/close to town and whether it has existing disturbances), a construction-free buffer shall be established. The construction-free buffer will be a minimum of 800 feet and can be increased based on the biological monitor's observations of the behavior at the nest.

VIII(b): All workers on the construction of the Project Site shall attend tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if a golden eagle is observed on or near the construction zone.

3.4.9 Western Burrowing Owl

IX(a): Preconstruction surveys are required to ascertain whether or not burrowing owls occupy burrows on or adjacent to the site. Preconstruction surveys will be conducted in accordance with the CDFW's *Staff Report on Burrowing Owl Mitigation (2012)*. These surveys consist of a minimum of two surveys, with the first survey being no more than 14 days prior to initial construction activities (i.e., vegetation removal, grading, excavation, etc.) and the second survey conducted no more than 24 hours prior to initial construction activities. Surveys will ensure 100% visual coverage. If no burrowing owls or fresh sign of burrowing owls are observed during preconstruction surveys, construction may proceed. If burrowing owls or their recent sign are observed during these surveys, occupied burrows will be identified by the monitoring biologist and a 250-foot buffer will be established and maintained until a qualified biologist has determined the burrowing owl has abandoned the burrow.

IX(b): All workers on the project site shall attend a tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if a western burrowing owl is observed.

3.4.10 American Badger

X(a): During the course of the preconstruction surveys for other species, a qualified biologist shall also determine the presence or absence of badgers prior to the start of construction. If badgers are found to be absent, no other mitigations for the protection of badgers shall be warranted.

X(b): If an active badger den is identified during pre-construction surveys within or immediately adjacent to an area subject to construction, a construction-free buffer of up to 300 feet shall be established around the den. Once the biologist has determined that badger has vacated the burrow, the burrow can be collapsed or excavated, and ground disturbance can proceed. Should the burrow be determined to be a natal or reproductive den, and because badgers are known to

use multiple burrows in a breeding burrow complex, a biological monitor shall be present onsite during construction activities in the vicinity of the burrows to ensure the buffer is adequate to avoid direct impact to individuals or natal/reproductive den abandonment. The monitor will be required to be present until it is determined that young are of an independent age and construction activities would not harm individual badgers.

XI(c): All workers on the project site shall attend a tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if an American badger is observed.

3.4.11 San Joaquin Kit Fox

XI(a): During the course of the preconstruction surveys for other species, a qualified biologist shall also determine the presence or absence of kit fox prior to the start of construction. If badgers are found to be absent, no other mitigations for the protection of badgers shall be warranted.

XI(b): If an active kit fox den is identified during pre-construction surveys within or immediately adjacent to an area subject to construction, a construction-free buffer of up to 300 feet shall be established around the den. Once the biologist has determined that kit fox has vacated the burrow, the burrow can be collapsed or excavated, and ground disturbance can proceed. Should the burrow be determined to be a natal or reproductive den, a biological monitor shall be present onsite during construction activities in the vicinity of the burrows to ensure the buffer is adequate to avoid direct impact to individuals or natal/reproductive den abandonment. The monitor will be required to be present until it is determined that young are of an independent age and construction activities would not harm individual kit fox.

XI(c): All workers on the project shall attend a tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if a kit fox is observed.

3.4.12 Riparian Habitat and Other Sensitive Natural Communities, Including Federally and State Protected Wetlands

XII: Prior to the initiation of ground-disturbing activities, a formal wetland delineation will be conducted on the site and submitted to the USACE for verification to determine the extent of all hydrological features, their jurisdictional status, and the extent of any impacts of the currently proposed project. A summary of the wetland delineation shall be submitted to the City of Antioch Community Development Department.

IV-13(b). Prior to discharging any dredged or fill materials into any waters of the U.S. within the project site and/or the off-site improvement areas, the applicant shall obtain permit authorization to fill wetlands under Section 404 of the federal Clean Water Act (CWA) (Section 404 Permit) from USACE. The Section 404 Permit application shall include an assessment of directly impacted, avoided, and preserved acreages to waters of the U.S. Mitigation measures shall be developed as part of the Section 404 Permit to ensure no net loss of wetland function and values. Mitigation for direct impacts to waters of the U.S. within the project site and/or the off-site improvement areas would occur at a minimum of 1:1 ratio for direct impacts by purchasing seasonal wetland credits from the Cosumnes Mitigation Bank or other wetland mitigation bank that services the project site, and is approved by the USACE and the RWQCB.

Alternatively, the project applicant may create, preserve, and manage new seasonal wetlands on or off of the project site that is of equal or greater quality to the habitats being impacted at a minimum 1:1 mitigation ratio. A project-specific Wetland Mitigation and Monitoring Plan prepared by a qualified wetland restoration ecologist that includes the following information shall be provided to the City of Antioch Community Development Department prior to conducting any activity that would result in the placement of any fill material into a water of the U.S. or water of the State:

A description of the impacted water;

- A map depicting the location of the mitigation site(s) and a description of existing site conditions;

- A detailed description of the mitigation design that includes: (i) the location of the created wetlands; (ii) proposed construction schedule; (iii) a planting/vegetation plan; (iv) specific monitoring metrics, and objective performance and success criteria, such as delineation of created area as jurisdictional waters using USACE published methods; and (v) contingency measures if the created wetlands do not achieve the specified success criteria; and
- Short-term and long-term management and monitoring methods.

If the wetland mitigation site is a separate mitigation property, the project applicant will grant a conservation easement to a qualified entity, as defined by Section 81.5.3 of the California Civil Code, preserving the created seasonal wetland(s) in perpetuity, and establish an endowment fund to provide for the long-term management, maintenance, and monitoring of the created seasonal wetland(s). If the proposed project includes placing fill material into jurisdictional waters of the U.S. or waters of the State, the project applicant shall provide the City of Antioch Community Development Department with a copy of permits issued by the USACE and RWQCB authorizing the fill.

In addition, a Water Quality Certification or waiver pursuant to Section 401 of the CWA must be obtained for Section 404 permit actions. Proof of compliance with the mitigation measure shall be submitted to the City of Antioch Community Development Department prior to the issuance of grading permits.

IV-13(c). Impacts to riparian habitat within CDFW's Section 1602 jurisdictional areas that would occur during construction shall be mitigated through planting California native trees and/or shrubs within the Sand Creek buffer area. Impacted trees and shrubs shall be mitigated with a 3:1 (replacement:impacts) ratio. Replacement trees and shrubs shall be a minimum of one gallon size trees/shrub replacements.

In addition, the project applicant will implement appropriate BMPs to prevent construction related impacts that could result in discharge of eroded soils or pollutants into Sand Creek and the creek's tributaries. The measures shall include the installation of wildlife-friendly hay wattles and/or silt fence that will prevent unintended impacts during construction activities associated with Sand Creek. In addition, orange silt fencing shall be installed at the top-of-bank of Sand Creek

to prevent unintended human and equipment traffic adjacent to Sand Creek. Finally, the dripline of all retained trees within the drainages on the project site, if near work areas, shall be protected through the installation of orange construction fencing.

The project applicant shall satisfy this mitigation by providing the City of Antioch Community Development Department with a fully executed copy of a CDFW Section 1600 Streambed Alteration Agreement (SAA) that includes these, or other functionally equivalent, BMPs, prior to any construction activities associated with Sand Creek. In addition to the mitigation requirements outlined here, the project applicant shall implement any additional conditions contained in the SAA.

3.4.13 Trees

XII: As ordinance-sized trees may occur onsite, mitigation for removal of any ordinance-sized trees shall follow the City's tree ordinance requirements which may require planting of replacement trees or fees.

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APPENDIX B

PRELIMINARY GEOTECHNICAL EXPLORATION

1519-00
SOILS



ENGEO
INCORPORATED
GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

PRELIMINARY GEOTECHNICAL
EXPLORATION

SULLENGER RANCH

ANTIOCH, CALIFORNIA

SUBMITTED

TO

CENTEX HOMES CORPORATION

SAN RAMON, CALIFORNIA

PREPARED

BY

ENGEО INCORPORATED

PROJECT NO. 6826.1.001.01

JUNE 29, 2005

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Project No.
6826.1.001.01

June 29, 2005

Mr. John Buller
Centex Homes Corporation
2527 Camino Ramon, Suite 100
San Ramon, California 94583

Subject: Sullenger Ranch
Antioch, California

PRELIMINARY GEOTECHNICAL EXPLORATION

Dear Mr. Buller:

With your authorization, we have conducted a preliminary geotechnical exploration for the proposed residential development on the Sullenger Ranch property east of Deer Valley Road and south of Sand Creek in Antioch, California. The accompanying report contains our exploration data and our preliminary conclusions and recommendations for residential construction on the subject property. It is our preliminary opinion that the proposed residential development is feasible from a geotechnical standpoint provided the design level recommendations are incorporated into project plans and implemented during construction.

We are pleased to be of service to you on this project and will continue to consult with you and your design team as project planning progresses.

Very truly yours,

ENGEO INCORPORATED

Reviewed by:

Kelsey Adams

Josef J. Tootle, GE

ka/jt/reviewed by dsh/jb:prelimgex

cc: 1 - Mr. Grant Gibson, CBG

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INTRODUCTION

Purpose and Scope

The purpose of this preliminary geotechnical report is to provide preliminary recommendations regarding the suitability of the site for development, as well as grading and foundation design criteria for the proposed residential development.

Our scope of services as described in our proposal dated May 17, 2005, included:

- Exploratory drilling of five to eight test borings and excavation of 10 to 16 test pits within the site.
- Sampling and laboratory testing of subsurface materials from the borings.
- Logging and visual observation of the borings and test pits.
- Review of historical aerial photographs.
- Preliminary assessment of geological hazards and development of the 1997 UBC seismic design criteria.
- Preliminary recommendations for mitigation of geotechnical constraints such as landslide hazards and expansive soils as necessary.
- Preliminary grading and foundation type recommendations for the proposed development.
- Reporting our preliminary findings and recommendations.

This preliminary report was prepared for the exclusive use of Centex Homes Corporation and their design team consultants. In the event that any changes are made in the character, design, or layout of the development, the preliminary conclusions and recommendations contained in this report must be reviewed by ENGEO Incorporated to determine whether modifications to the report are

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Site Location and Description

The site is located east of Deer Valley Road and south of Sand Creek in Antioch, California (Figure 1). The parcel (as shown on Figure 2) is approximately 104 acres and is identified by Assessors Parcel Numbers (APN) 057-042-006 and 057-050-005.

The site sits on a fairly hilly parcel ranging in elevation from approximately 200 feet above mean sea level (msl) to approximately 327 feet above msl. The site is bounded by Deer Valley Road to the east, Sand Creek to the north, and vacant fields to the east and south. Natural slope gradients at the site range from around 2:1 or steeper along the creek to relatively flat in the southeast-trending valley in the southeast portion of the site. Existing vegetation consist of native grasses. The property is currently being used for cattle grazing and is surrounded with fencing. One large oak tree is located on-site near the center of the property.

Proposed Development

Based upon preliminary hand-drawn plans prepared by Carlson, Barbee & Gibson, Inc., it is proposed to develop the property with 150 single-family lots and associated roadways and underground utilities. We anticipate that the structures will be one to two stories in height and of wood-framed construction; therefore, the building loads are expected to be light to moderate. Site grading will involve cuts up to approximately 125 feet and fills up to approximately 20 feet in order to create the building pads and street areas.

GEOLOGY AND SEISMICITY

Site Geology

The geology of the area consists mainly of Quaternary alluvium (Qa; Dibblee, 1980). The hilly portions of the site are composed of Markley Sandstone (Tkn; Dibblee, 1980) which is a tan, arkosic sandstone or minor shale. A small amount of Nortonville Shale (Tkn; Dibblee, 1980), a micaceous clay shale, is present in the southwest portion of the site.

Site Soils

Soils at the property have been classified by the U.S. Department of Agriculture as mainly belonging to the Altamont-Fontana (AcF) complex (USDA, 1977). Smaller portions of the property are additionally classified as Altamont clay (AbE), Capay clay (CaA), Pescadero clay loam (Pb) and Rincon clay loam (RbA) (USDA, 1977). The Altamont-Fontana complex is mapped over most of the site, and is composed of approximately 50 percent clay, 30 percent silty clay loam, with the remainder being comprised of other clay and loam.

Faulting and Seismicity

The site is located in a region that contains numerous active earthquake faults. However, no Holocene active faults are mapped across the site by the California Division of Mines and Geology (CDMG) or United States Geological Survey (USGS) and the site is not located within a State-mandated Earthquake Fault Zone. However, according to published maps by Jennings (1994), Bortugno (1991), and Graymer (1994) the potentially active Antioch-Davis fault crosses through the west-central portion of the project site (Figure 2).

Numerous small earthquakes occur every year in the San Francisco Bay Region, and larger earthquakes have been recorded and can be expected to occur in the future. Figure 4 shows the approximate locations of major faults and significant historic earthquakes recorded within the San Francisco Bay Region. The nearest strike-slip fault zoned as active¹ by the State of California Geological Survey is the Greenville Fault, located about 9.0 kilometers to the southwest (Figure 4). According to attenuation relationships developed by Idriss (1994), the Greenville fault is considered capable of causing a probable² mean horizontal site acceleration of approximately 0.34g for a maximum moment magnitude of 6.7 (Blake, 2000).

The regional seismicity of the Bay Area has recently been evaluated by the Working Group on Northern California Earthquake Probabilities (2003). The Working Group periodically attempts to summarize seismic risk in the Bay Area by presenting probabilities of M 6.7 or greater earthquakes on active Bay Area faults for a 30-year return interval. The most recent summary gives a 62 percent aggregate probability for the entire Bay Area. The Hayward-Rodgers Creek Fault, Calaveras Fault, and Concord/Green Valley Fault are assigned 27 percent, 11 percent and 4 percent probabilities, respectively.

A segment of the Great Valley Fault has been identified within 10 miles of the site. The Great Valley Fault is a blind thrust fault with no known surface expression; the postulated fault location has been based on regional seismic activity and isolated subsurface information.

¹ An active fault is defined by the State Mining and Geology Board as one that has had surface displacement within Holocene time (about the last 10,000 years) (Hart, 1992). A potentially active fault is defined by the State Mining and Geology Board as one that has had surface displacement within Pleistocene time (about the last 2,000,000 years) (Hart, 1992).

² From California Division of Mines and Geology Note 43: "The maximum probable earthquake is the maximum earthquake that is likely to occur during a 100-year interval. It is to be regarded as a probable occurrence, not as an assured event that will occur at a specific time." "The maximum credible earthquake is the maximum earthquake that appears possible under the presently known tectonic framework. It is a rational and believable event that is in accord with all known geologic and seismologic facts. In determining the maximum credible earthquake, little regard is given to its probability of occurrence, except that its likelihood of occurring is great enough to be of concern."

Portions of the Great Valley fault are considered seismically-active thrust faults; however, because this fault does not extend to the ground surface, it is not zoned as active by the State of California. The Great Valley fault is considered capable of causing the highest ground shaking at the site, but the recurrence interval is believed longer than for more distant, strike-slip faults. Recent studies suggest that this boundary fault may have been the cause of the Vacaville-Winters earthquake sequence of April 1892 (Eaton, 1986; Wong and Biggar, 1989; Moores and others, 1991). Further seismic activity can be expected to continue along the western margin of the Central Valley, and as with all projects in the area, the development should be designed to accommodate strong earthquake ground shaking.

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GEOTECHNICAL EXPLORATION

Field Exploration

The field exploration for this study was conducted on June 21, 2005, and consisted of drilling five borings (1-B1 through 1-B5) to depths ranging from about 10 to 30 feet below existing grade, and twelve test pits (1-TP1 through 1-TP12), with approximate locations shown on Figure 2. The borings and test pits were roughly located by pacing from existing features and should be considered accurate only to the degree implied by the method used. All ENGEO exploration locations were grouted on the day of the exploration in accordance with Contra Costa County requirements.

The borings were drilled using a truck-mounted, B-24 drill rig equipped with 4-inch-diameter solid flight augers. An ENGEO engineer logged the borings in the field and collected soil samples using 3-inch O.D. California-type split-spoon samplers fitted with 6-inch-long brass liners. The samplers were driven with a 140-pound safety hammer falling a distance of 30 inches. A rope and cat-head system was used to lift the safety hammer during our exploration. The penetration of the sampler into the native materials was field recorded as the number of blows required to drive the sampler 18 inches in 6-inch increments. The boring logs show the number of blows required for the last one foot of penetration. The field logs were used to develop the report boring logs (Appendix A). The logs depict subsurface conditions within the borings for the date of drilling; however, subsurface conditions may vary with time.

Exploratory Test Pits 1-TP1 through 1-TP12 were excavated using an excavator equipped with a 30-inch-wide bucket. The test pits extended to depths ranging from 6½ to 15 feet below the ground surface (bgs). An ENGEO geologist observed the excavation of the test pits and logged the soil conditions encountered. The logs depict subsurface conditions within the test pits at the time the exploration was conducted. Subsurface conditions at other locations may differ from conditions

noted at these locations. The passage of time may result in altered subsurface conditions. In addition, stratification lines represent the approximate boundaries between soil types and the transitions may be gradual.

Laboratory Testing

Representative samples of on-site soils were selected for laboratory testing to determine the following soil characteristics:

Soil Characteristic	Test Method	Report Location
Natural Unit Weight and Moisture Content	ASTM D-2216	Boring Logs, Appendix A
Plasticity Index	ASTM D-4318	Appendix C
Unconfined Compression	ASTM D-2166	Appendix C

The laboratory test results are shown on the boring logs in Appendix A and individual test results are presented in Appendix C.

Subsurface Stratigraphy

In general, the subsurface conditions encountered in our borings consist of silty clays in the upper 10 to 20 feet, and generally reached claystone or siltstone bedrock at a depth of approximately 20 to 25 feet. Detailed boring logs can be found in Appendix A. Subsurface conditions encountered in the test pits indicated that there is four to five feet of colluvium covering portions of the site, but as deep as nine feet in 1-TP4 and as shallow as 1 foot in 1-TP8 through 1-TP10. The rock units encountered on-site consisted of the Markley Sandstone and the Nortonville Shale. These units were encountered at various depths ranging from 1 to 9 feet below the ground surface. Detailed test pit logs can be found in Appendix B.

Laboratory analysis of near-surface silty soil and claystone bedrock indicates that the Plasticity Indices (PI) range from 36 through 50. This suggests that the native bedrock and soils tested are highly plastic and have a high expansion potential.

Groundwater

Groundwater was only encountered in Boring 1-B5 at a depth of approximately 13 feet bgs (187 ft msl) during drilling. Groundwater was not encountered in any of the test pits. It should be noted that the borings may not have been left open for a sufficient period of time to establish equilibrium groundwater conditions. In addition, fluctuations in groundwater levels may occur seasonally and over a period of years because of precipitation, changes in drainage patterns, irrigation and other factors. Future irrigation may cause an overall rise in groundwater levels.

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DISCUSSION AND CONCLUSIONS

Landslides

Landslides are a primary geotechnical consideration for most of the East Bay Hills. Landslide deposits identified during this study were mapped using stereo-paired aerial photographs, and field checked during site reconnaissance and field explorations. During our field reconnaissance of the property, we encountered profiles of stiff to very stiff silty clays overlying sandstone and claystone bedrock in our test pits excavated in the possible landslide areas. With the exception of some isolated areas along Sand Creek, we did not identify hummocky, uneven terrain characteristic of landslide deposits across the majority of the site. Therefore, it is unlikely that the features initially suspected are landslides but more likely represent colluvial material. It is our opinion that landslides are unlikely to adversely impact the majority of the property.

Seismic Hazards

Potential seismic hazards resulting from a nearby moderate to major earthquake can generally be classified as primary and secondary. The primary effect is ground rupture, also called surface faulting. The common secondary seismic hazards include ground shaking; ground lurching, soil liquefaction and lateral spreading. Based on topographic and lithologic data for this site, the risk of regional subsidence or uplift, landslides, tsunamis, and seiches is considered low to negligible at the site.

Ground Rupture. Because there are no known active faults crossing the property and the site is not located within an Alquist-Priolo Earthquake Fault Zone, it is our opinion that ground rupture is unlikely at the property.

Ground Shaking. An earthquake of moderate to high magnitude generated within the San Francisco Bay Region could cause considerable ground shaking at the site, similar to that which has occurred in the past. To mitigate the shaking effects, all structures should be designed using sound engineering judgment and the latest Uniform Building Code (UBC) requirements as a minimum.

Seismic design provisions of current building codes generally prescribe minimum lateral forces, applied statically to the structure, combined with the gravity forces of dead and live loads. The prescribed lateral forces are generally considered to be substantially smaller than the equivalent forces that would be associated with a major earthquake. Structures should be able to: (1) resist minor earthquakes without damage, (2) resist moderate earthquakes without structural damage but with some nonstructural damage, and (3) resist major earthquakes without collapse but with some structural as well as nonstructural damage. Conformance to the current building code recommendations does not constitute any kind of guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake; however, it is reasonable to expect that a well-designed and well-constructed structure will not collapse or cause loss of life in a major earthquake (SEAOC, 1996).

According to Petersen et al. (1997), the use of near source factors (N_s and N_v) for blind thrust faults such as the Great Valley fault, may overemphasize the seismic impact to the site. The Greenville fault was utilized as the seismic source to estimate near source factors and the resultant seismic coefficients. Based on the subsurface soil conditions encountered and local seismic sources, the site may be characterized for design based on Chapter 16 of the 1997 UBC using the following information:

Categorization/Coefficient	Design Value
Soil Profile Type (Table 16A-J)	S_D
Seismic Zone (Figure 16A-2)	4
Seismic Zone Factor (Table 16A-I)	0.4
Seismic Source Type (Table 16A-U)*	B
Near Source Factor N_s (Table 16A-S)	1.0
Near Source Factor N_v (Table 16A-T)	1.0
Seismic Coefficient C_a (Table 16A-Q)	$0.44 N_s$
Seismic Coefficient C_v (Table 16A-R)	$0.64 N_v$

*The Greenville fault is located approximately 9 km from the site.

Liquefaction. Liquefaction is a phenomenon in which saturated cohesionless soils have a temporary loss of strength due to cyclic stresses and increased pore pressure as a result of strong ground shaking caused by earthquakes. The common adverse effects of liquefaction may include settlement, loss of foundation support, ground surface rupture and sand boils, lateral spreading, instability of slopes and related effects. Soils most susceptible to liquefaction are clean, loose, uniformly graded and fine-grained granular soils.

The subsurface conditions encountered in the borings consisted primarily of silty clays, claystone and sandstone. Groundwater was encountered at one of borings, B-5, at depths of 13 feet bgs. Based on field exploratory data, estimated in place density and soil gradation, it is our opinion that liquefaction at the site is unlikely.

Lateral Spreading. Lateral spreading is a failure within a nearly horizontal soil zone, which causes the overlying soil mass to move down a gentle slope or toward a free face such as a creek or open body of water. Lateral spreading is most often associated with strength loss due to liquefaction. As described above, the liquefaction potential of the subsurface soils is considered low. The potential for lateral spreading to occur at the site during seismic shaking is also considered low because of the lack of potentially liquefiable soils.

Dynamic Densification Due to Earthquake Shaking. Densification of loose granular soils above the groundwater could cause settlement of the ground surface due to earthquake-induced vibrations. Loose granular soils located deeper than 2 feet below the existing ground surface were not encountered in our exploratory borings. Accordingly, considering that the upper 2 feet of the site will be re-worked as engineered fill, it is our opinion that the potential for dynamic densification is low.

Expansive Soils

The soils encountered across the site consisted of plastic silty clay deposits. These soils can be expected to display a high expansion potential. The potential impact of expansive soils can be mitigated through proper site grading and foundation design.

Corrosion Potential

An evaluation of possible corrosion impacts to site improvements has not been conducted on site soils because of the relatively large amount of proposed grading to bring the site to design grades. We recommend this testing be conducted after rough grading of the site. In lieu of performing chemical testing to assess the corrosion potential, concrete foundations can be designed considering the severe sulfate parameters as defined in the 1997 Uniform Building Code (UBC).

Slope Stability

The primary geologic conditions to potentially affect slope stability are colluvial deposits mapped in the project areas. Based on preliminary development plans, it appears that portions of the colluvial areas will be removed by design cut. To stabilize the slopes within the development areas, unstable colluvial material within the project limits should be completely removed, and site grades restored with properly drained engineered fill materials. The test pit logs depict the colluvial materials encountered during our field exploration.

Based on bedding attitudes encountered in test pits on the site, there appears to be a low potential for adverse bedding to occur on cut slopes. However, adverse bedding conditions were observed along portions of the banks of Sand Creek at the northern boundary of the project. Adverse bedding is considered to be an unstable bedrock slope condition, where beds dip out of the slope (e.g. at angles

less than the designed slope angle) yet also dip at a high enough angle (generally greater than 8 degrees) to cause bedding contacts to represent unfavorable discontinuities (i.e. planes of weakness) and act as landslide slip surfaces that increase the likelihood of slope failure. Although test pit information indicates an overall low potential for adverse bedding, a Certified Engineering Geologist should observe exposed cut slopes on the site during excavation, and confirm that the slope be overexcavated and re-built as a buttress fill in areas where adverse bedding is encountered.

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PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

It is our opinion, based on the exploration data and laboratory test results, that the project site is suitable for the proposed construction from a geotechnical standpoint. After confirmation with a design level geotechnical exploration, the recommendations included in this report, along with other sound engineering practices, should be incorporated in the design and construction of the project. The presence of expansive soils will be the greatest challenge at this site; however, expansive soils can be mitigated through placement of engineered fill and/or design considerations for improvements.

Grading

Based on a review of the provided preliminary site and grading plans, grading will involve cuts up to approximately 125 feet and fills up to approximately 20 feet. Grading operations, including the type and quality of the import fill if needed, should meet the requirements of the Guide Contract Specifications included in the Appendix D, and should be observed and tested by ENGEO's field representative. ENGEO must be notified a minimum 48 hours prior to grading in order to coordinate its schedule with the grading contractor.

Ponding of stormwater must not be allowed at the site, particularly on the building pads during work stoppage for rainy weather. Before the grading is halted by rain, positive slopes should be provided to carry surface runoff in a controlled manner to a discharge point approved by the Civil Engineer.

Demolition and Stripping

Site development will commence with the removal of fences surrounding the property and trees with accompanying root systems. Following the demolition of existing improvements, site development should include removal of vegetation, debris, loose soil and soft compressible

materials in any location to be graded. As a minimum, tree roots should be removed at least 3 feet below the existing grades. The actual depth of tree root removal should be determined by the Geotechnical Engineer's representative during the time of grading.

Any soft compressible soils should be removed from areas to receive fill or structures, or those areas to serve as borrow. Subject to approval by the Landscape Architect, strippings and organically-contaminated soils can be used in landscape areas. Otherwise, such soils should be removed from the project site. Any topsoil that will be retained for future use in landscape areas should be stockpiled in areas where it will not interfere with grading operations.

All excavations from demolition and stripping below design grades should be cleaned to a firm, undisturbed soil or bedrock surface determined by the Geotechnical Engineer. This surface should then be scarified, moisture conditioned and backfilled with compacted engineered fill. The requirements for backfill materials and placement operations are the same as for engineered fill.

No loose or uncontrolled backfilling of depressions resulting from demolition and stripping is permitted.

Graded Slopes

Graded cut or fill slopes less than 10 feet in height should be graded no steeper than 2:1 (horizontal:vertical). Any slopes greater than 10 feet in height should be inclined no steeper than 3:1. All fill slopes should be adequately keyed into firm natural materials unaffected by shrinkage cracks.

Selection of Materials

With the exception of any organically contaminated materials (soil which contains more than 3 percent organics) or specifically required non-expansive fill, the site soils are suitable for use as engineered fill.

The Geotechnical Engineer should be informed when import materials are planned for the site. Import materials should be submitted and approved by the Geotechnical Engineer prior to delivery at the site and should conform to the requirements provided in Section 2.02B of Part I of the Guide Contract Specifications.

Creek Offset

As previously discussed, Sand Creek is located along portions of the northern property boundary and is characterized by locally over-steepened creek banks. Based on a review of historical aerial photographs, it appears that the alignment of Sand Creek has not significantly changed over the past 45 to 50 years. However, areas of localized instability were observed, as well as the existence of adverse bedding along portions of the creek banks. It is our opinion that the proposed development be appropriately offset from Sand Creek in the northern portion of the site. We recommend a preliminary creek set-back of 150 feet, or a 3:1 slope projected upward from the toe of the existing creek bank (whichever is less), be incorporated into the project planning.

Foundation Design

It is our opinion that a post-tension mat foundation system is appropriate for the proposed residential structures. Recommendations for design of this foundation system are provided in the following paragraphs. Structural mats may need to be stiffened to reduce differential movements

from heaving or settlement to a value compatible with the proposed superstructure type and architectural finishes.

Post-tensioned mats should be designed according to methods recommended in the Post Tensioning Institute "Design and Construction of Post-Tensioned Slabs-on-ground, Second Edition", dated 1996.

Preliminary post-tensioned mat design parameters:

Center Lift Condition:	Edge Moisture Variation Distance, $e_m = 5.0$ feet Differential Soil Movement, $y_m = 2.5$ to 3.6 inches
Edge Lift Condition:	Edge Moisture Variation Distance, $e_m = 4.0$ feet Differential Soil Movement, $y_m = 1.1$ to 1.4 inch

Post-tensioned slabs should be designed for an average allowable soil pressure of 1,000 pounds per square foot (psf) or 1,500 psf for concentrated loads. These values may be increased by one-third when considering total loads, including wind or seismic loads.

Secondary Slab-on-Grade Construction

This section provides guidelines for secondary slabs such as patios, walkways, driveways and steps. Secondary slabs-on-grade should be constructed structurally independent of the foundation system. This allows slab movement to occur with a minimum of foundation distress. Where slab-on-grade construction is anticipated, care must be exercised in attaining a near-saturation condition of the subgrade soil before concrete placement.

Slabs-on-grade should be designed specifically for their intended use and loading requirements by the Structural Engineer. As mentioned previously, the site soils have very high expansion potential; therefore, cracking of conventional slabs should be expected in the future. To reduce and control

cracking, slabs-on-grade should be reinforced with steel rebar and provided with frequent control joints. The actual reinforcement should be designed by the Structural Engineer and should, as a minimum, consist of No. 3 bars spaced 16 inches on-center each way. In our experience, welded wire mesh is not sufficient to control slab cracking.

Secondary slabs-on-grade should have a minimum thickness of 4 inches. A 4-inch-thick layer of clean crushed rock or gravel (Section 2.04, Part I of Guide Contract Specifications) should be placed under slabs. Exterior slabs should be constructed with thickened edges extending at least 6 inches into compacted soil to minimize water infiltration. Slabs should slope away from the buildings at a slope of at least 2 percent to prevent water from flowing toward the building. Frequent control joints should be provided to control the cracking.

Preliminary Pavement Design

Based on the field explorations and laboratory testing, we estimate that site soils will have an R-value of 5. The following preliminary pavement sections, for Traffic Indices of 4.5 to 9.5 and an assumed R-value of 5, have been provided. According to methods contained in Topic 608 of Highway Design Manual by CALTRANS and City of Antioch requirements, the following minimum asphaltic concrete pavement sections are recommended:

Traffic Index	Alternative I		Alternative II		
	AC (in.)	AB (in.)	AC (in.)	AB (in.)	ASB (in.)
4.5	2.5	10.0	2.5	6.0	5.0
5.0	3.0	12.0	3.0	6.0	7.0
6.0	3.5	14.0	3.5	8.0	7.0
7.0	4.0	16.0	4.0	9.0	8.0
8.0	5.0	18.0	5.0	11.0	9.0
9.5	6.0	22.0	6.0	13.0	11.0

Notes: AC is asphaltic concrete
 AB is aggregate base Class 2 Material with minimum R = 78
 ASB is asphalt stabilized base

The Traffic Index should be determined by the Civil Engineer or appropriate public agency. These sections are for estimating purposes only. Actual sections to be used should be based on R-value tests performed on samples of actual subgrade materials recovered at the time of grading.

Pavement materials and construction should comply with the specifications and requirements of the Standard Specifications by the State of California Division of Highways and City of Antioch requirements, and also meet the following minimum requirements.

- All pavement subgrades should be scarified to a depth of 12 inches below finished subgrade elevation, moisture conditioned to at least 2 percent above optimum moisture, and compacted to at least 90 percent relative compaction for clayey soils and 95 percent relative compaction for granular soils and in accordance with City requirements.
- Subgrade soils should be in a stable, non-pumping condition at the time aggregate base materials are placed and compacted.
- Adequate provisions must be made such that the subgrade soils and aggregate base materials are not allowed to become saturated.
- Aggregate Base material should meet current City requirements for Class 2 Aggregate Base, and should be compacted to at least 95 percent of maximum dry density.
- Asphalt paving materials should meet current Caltrans specifications for asphaltic concrete.
- All concrete curbs separating pavement and irrigated landscaped areas should extend into the subgrade and below the bottom of adjacent aggregate base materials.

Future Geotechnical Studies

As mentioned above, based on the preliminary exploration, it is our opinion that the proposed project is feasible from a geotechnical standpoint. Additional geotechnical and/or geologic design studies will be required to more fully develop design level recommendations. We recommend future studies include additional soil borings, test pits, laboratory testing, chemical testing for corrosivity, geologic mapping and fault trenching/evaluation.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

This report is issued with the understanding that it is the responsibility of the owner to transmit the information and recommendations of this report to developers, owners, buyers, architects, engineers, and designers for the project so that the necessary steps can be taken by the contractors and subcontractors to carry out such recommendations in the field. The conclusions and recommendations contained in this report are solely professional opinions.

The professional staff of ENGEO Incorporated strives to perform its services in a proper and professional manner with reasonable care and competence but is not infallible. There are risks of earth movement and property damages inherent in land development. We are unable to eliminate all risks or provide insurance; therefore, we are unable to guarantee or warrant the results of our work.

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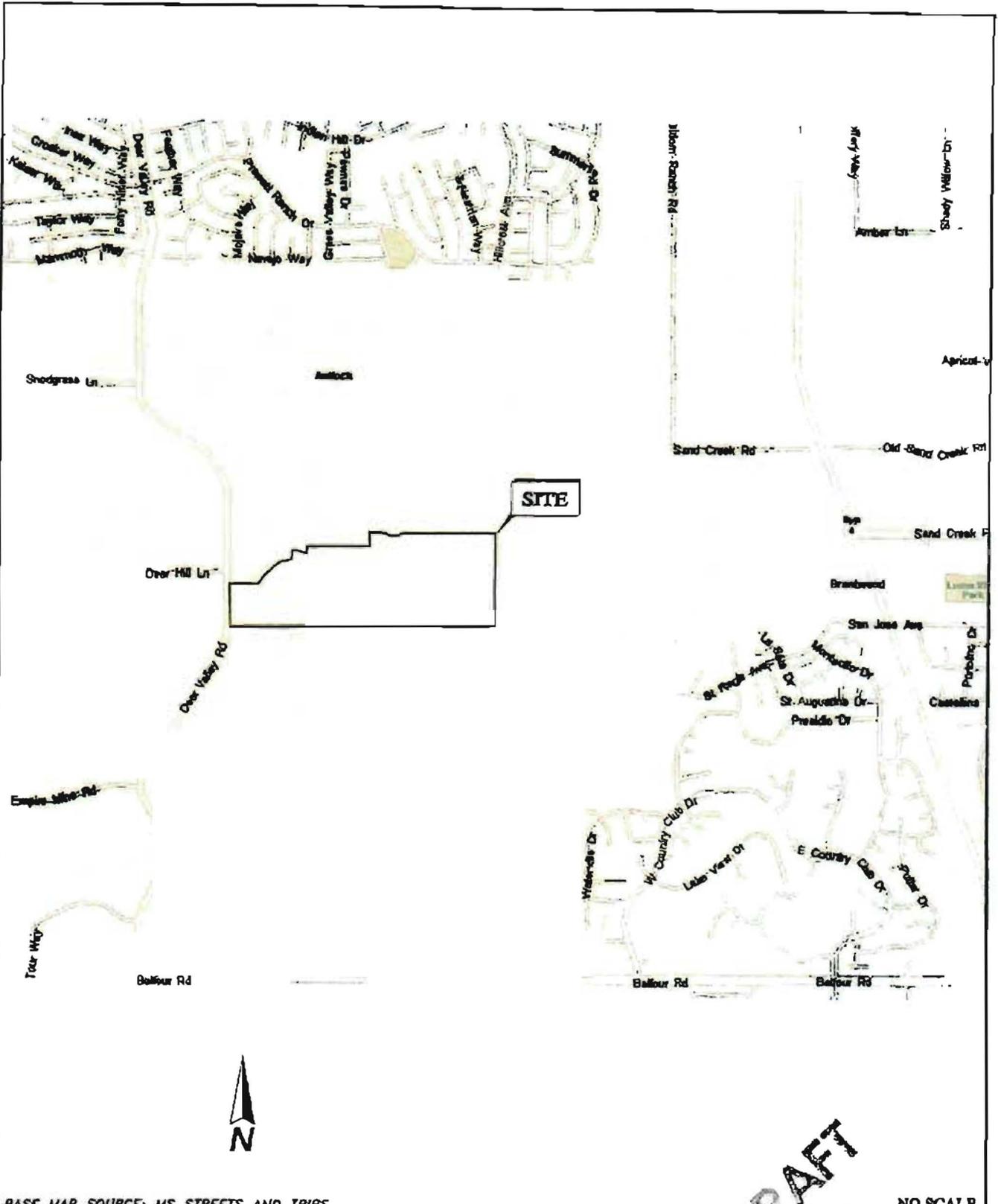
6826.1.001.01
June 29, 2005

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BASE MAP SOURCE: MS STREETS AND TRIPS

NO SCALE



SITE VICINITY MAP
SULLENGER RANCH
ANTIOCH, CALIFORNIA

PROJECT NO.	6826.1.001.01
DATE	JULY 2005
DRAWN BY:	PC
CHECKED BY:	JT

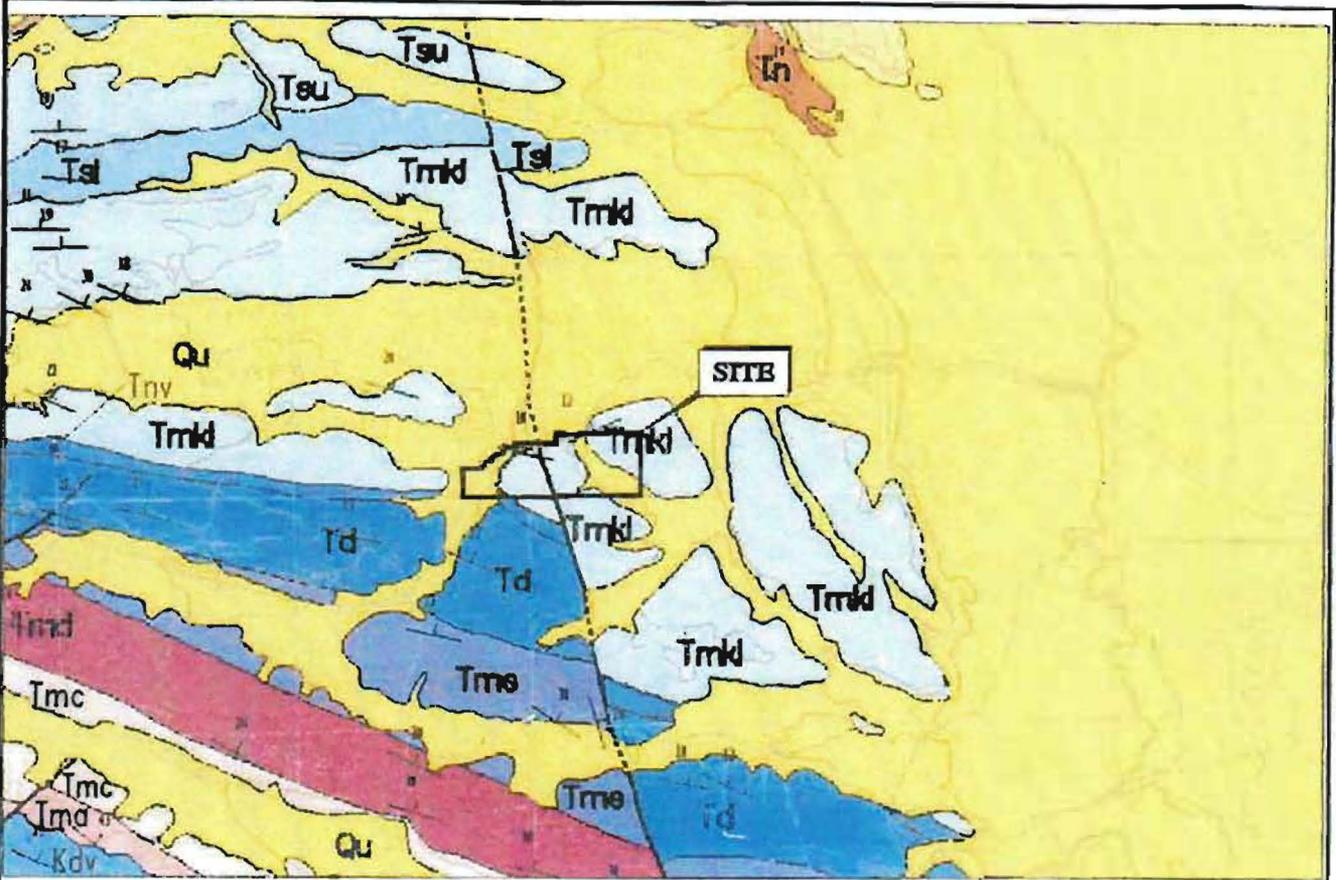
FIGURE NO.
1

ORIGINAL FIGURE PRINTED IN COLOR

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EXPLANATION

Au	UNDIVIDED QUATERNARY DEPOSITS	Tmc	MEGANOS FORMATION - SHALE MEMBER
Ttu	TULARE FORMATION	Tma	MEGANOS FORMATION - LOWER MEMBER
Tn	NEROLY SANDSTONE	Kdv	DEER VALLEY SANDSTONE OF COBURN
Tsl	MARKLEY FORMATION - LOWER SIDNEY FLAT SHALE MEMBER	Keu	UPPER UNIT E - SILTSTONE
Tmkl	MARKLEY FORMATION - LOWER MEMBER	Kel	UPPER UNIT E - SANDSTONE
Tnv	NORTONVILLE SHALE	Kd	UNIT D - SANDSTONE
Td	DOMINGENE FORMATION	Kds	UNIT D - SHALE MEMBER
Tme	MEGANOS FORMATION - UPPER MEMBER		
Tmd	MEGANOS FORMATION - SANDSTONE MEMBER		

----- BEDROCK CONTACT-DASHED WHERE GRADATIONAL OR APPROXIMATELY LOCATED

..... FAULT-DASHED WHERE INFERRED, DOTTED WHERE CONCEALED OR UNPROVED WHERE EXISTENCE IS DOUBTFUL;

STRIKE AND DIP OF STRATA

↘ INCLINED ✕ VERTICAL

DRAFT



BASE MAP SOURCE: GRAYMER



REGIONAL GEOLOGY MAP
SULLENGER RANCH
ANTIOCH, CALIFORNIA

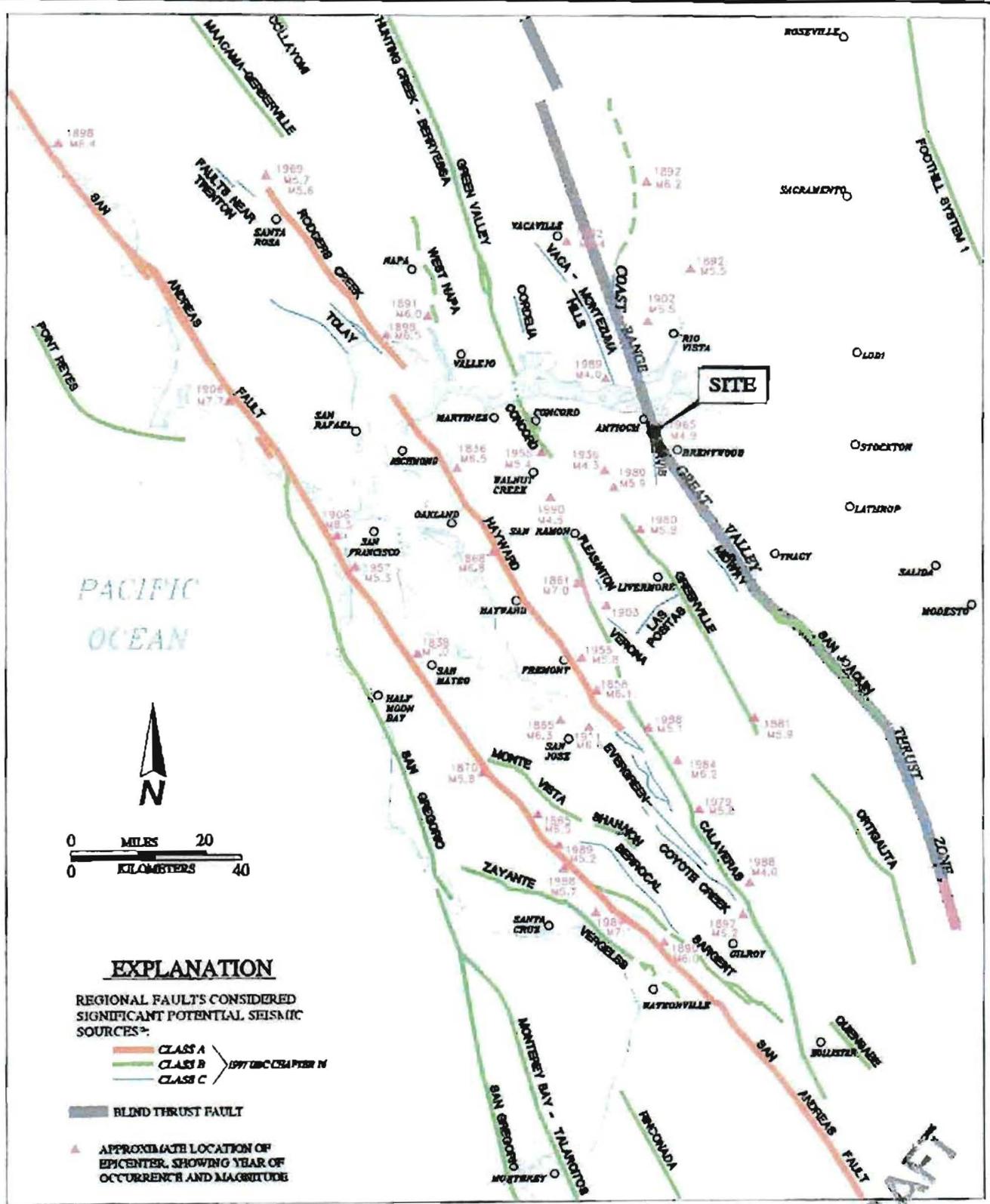
PROJECT NO:	6826.1.001.01
DATE:	JULY 2005
DRAWN BY:	PC
CHECKED BY:	JT

FIGURE NO.
3

ORIGINAL FIGURE PRINTED IN COLOR

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*BASED ON USGS OPEN FILE 96-706



REGIONAL FAULTING AND SEISMICITY
SULLENGER RANCH
ANTIOCH, CALIFORNIA

PROJECT NO.: 6826.1.001.01	FIGURE NO.
DATE: JULY 2005	4
DRAWN BY: PC	

ORIGINAL FIGURE PRINTED IN COLOR

G:\Working\05071021_Draft of the Sullenger Ranch Geologic Map\FIGURE 4 - Seismicity - 05-05.dwg 7-07-05 05:10

APPENDIX A

Boring Logs

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6826.1.001.01
June 29, 2005

LOG OF BORING B1

GEOTECHNICAL EXPLORATION
 SULLENGER RANCH
 ANTIOCH, CA
 6826.1.001.01

DATE DRILLED: JUNE 21, 2005
 HOLE DEPTH (FT): 21.0 ft.
 HOLE DIAMETER: 4 in.
 SURF ELEV (FT-MSL): 190 ft.

LOGGED / REVIEWED BY: K. ADAMS/ J.T.
 DRILLING CONTRACTOR: WEST COAST
 DRILLING METHOD: Solid Flight Auger
 HAMMER TYPE: 140# w/rope and cal-head

Depth in Feet	Depth in Meters	Sample No.	Sample	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0			SILTY CLAY (CH), dark brown, some light grey/white mottling, hard, moist, some fine-grained sand.			87	18.4	105.8	*4.5+
1				(grades brownish orange)			67	32.5	86.4	*4.5+
5				SANDSTONE, greyish tan w/ silver flecks, moist, friable, moderate weathering. (Harder Drilling @ 7.5')			55/6"	18.8		*4.5+
10				(grades tan/orange grey)			52/6"			*4.5+
15				CLAYSTONE, tan/orange, light grey mottling w/ silver flecks, friable, moderate weathering. (Harder Drilling @ 19')			60/8"			*4.5+
20				Bottom of Boring at 21'.						
25										
30										

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LOG OF BORING B2

GEOTECHNICAL EXPLORATION
 SULLENGER RANCH
 ANTIOCH, CA
 6826.1.001.01

DATE DRILLED: JUNE 21, 2005
 HOLE DEPTH (FT): 21.5 ft.
 HOLE DIAMETER: 4 in.
 SURF ELEV (FT-MSL): 173 ft.

LOGGED / REVIEWED BY: K. ADAMS/ J.T.
 DRILLING CONTRACTOR: WEST COAST
 DRILLING METHOD: Solid Flight Auger
 HAMMER TYPE: 140# w/rope and cat-head

Depth in Feet	Depth in Meters	Sample No.	Sample	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (ksf) *field approx
0	0			SILTY CLAY (CH), dark brown, black and tan mottling, hard, moist.	[Diagonal Hatching]		64	11.7	110.9	*4.5+
1				(stiffer @ 4', grades w/trace fine- to medium-grained sand)			90	15.2	114.8	*4.5+
5					[Diagonal Hatching]		70			*4.5+
10	3									
15				SANDY CLAY (CH), dark tan w/brown mottling, hard, moist, trace fine- to medium-grained sand.	[Diagonal Hatching]		73			*2.5
20	6			SILTY CLAY (CH), tan, stiff, moist, trace fine sand. LL=62, PI=47	[Diagonal Hatching]		25			*2.0
				Bottom of Boring at 21 1/2'.						
7										
25										
8										
30	9									

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LOG OF BORING B3

GEOTECHNICAL EXPLORATION
SULLINGER RANCH
ANTIOCH, CA
6826.1.001.01

DATE DRILLED: JUNE 21, 2005
HOLE DEPTH (FT): 30.5 ft
HOLE DIAMETER: 4 in.
SURF ELEV (FT-MSL): 183 ft.

LOGGED / REVIEWED BY: K. ADAMS/ J.T.
DRILLING CONTRACTOR: WEST COAST
DRILLING METHOD: Solid Flight Auger
HAMMER TYPE: 140# w/rope and cat-head

Depth in Feet	Depth in Meters	Sample No.	Sample	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (ksf) *field approx
0	0			SILTY CLAY (CH), dark brown, hard, moist, trace organics			60	13.5	109.7	10.7
5	2			SILTY CLAY (CL), brown, hard, moist, with fine- to coarse-grained sand, trace organics. (trace fine to coarse sub-angular gravel @ 7.5')			54	12.7	103.4	4.7
10	3						80	23.4	101.9	*4.5+
15	4						82			*4.5+
20	6			SANDY CLAY (CL), tan/grey, hard, moist, w/ silt. Harder drilling.			84	24.7	100.9	*4.5+
25	7			SILTY CLAY (CH), orange brown, grey and black mottling, trace fine-grained sand.						
28	8			(grades CL/CH with fine- to coarse-grained sand) Harder drilling @ 28'.			50/4"			*4.5+
30	9			SILTSTONE, dark grey, friable, little weathering. Bottom of Boring at 30 1/2'			70/5"			*4.5+

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ENGEO INCORPORATED

LOG OF BORING B4

GEOTECHNICAL EXPLORATION
SULLINGER RANCH
ANTIOCH, CA
6826.1.001.01

DATE DRILLED: JUNE 21, 2005
HOLE DEPTH (FT): 21.0 ft.
HOLE DIAMETER: 4 in.
SURF ELEV (FT-MSL): 250 ft.

LOGGED / REVIEWED BY: K. ADAMS/ J.T.
DRILLING CONTRACTOR: WEST COAST
DRILLING METHOD: Solid Flight Auger
HAMMER TYPE: 140# w/rope and cat-head

Depth in Feet	Depth in Meters	Sample No.	Sample	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0			SILTY CLAY (CH), dark brown, black and grey mottling, hard, moist, trace medium- to coarse-grained sand. LL=66, PI=50	[Diagonal Hatching]					
1	1		(drilling harder @ 3')				59			*4.5+
5	5		(grades trace fine-grained sand)				81	16.9	108.4	*4.5+
10	10		(Harder drilling @ 8') (grades light brown)				50/5.5"	19.2	107.7	*4.5+
15	15		(harder drilling @ 13')				50/5.5"			*4.5+
20	20			SILTY CLAY (CL), light brown w/ black and grey mottling, hard, moist, w/ fine- to coarse-grained sand.	[Diagonal Hatching]					
				Bottom of Boring at 21'.			55/6"			*4.5+
25	25									
30	30									

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LOG OF BORING B5

GEOTECHNICAL EXPLORATION
SULLINGER RANCH
ANTIOCH, CA
6826.1.001.01

DATE DRILLED: JUNE 21, 2005
HOLE DEPTH (FT): 21.5 ft.
HOLE DIAMETER: 4 in.
SURF ELEV (FT-MSL): 190 ft.

LOGGED / REVIEWED BY: K. ADAMS/ J.T.
DRILLING CONTRACTOR: WEST COAST
DRILLING METHOD: Solid Flight Auger
HAMMER TYPE: 140# w/rope and cat-head

Depth in Feet	Depth in Meters	Sample No.	Sample	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (ksf) *field approx
0	0			SILTY CLAY (CL), dark brown, hard, (trace medium to coarse grained sand, trace organics.	[Diagonal Hatching]		50	15.5	110.5	6.8
1			(stiffer @ 3')							
5			(grades w/ fine- to coarse-grained sand)				68	21.2	99.4	*4.5+
10	3		(grades stiff to very stiff, with trace fine-grained sand)				22	21.1	106.6	*2.5
15	5		(harder drilling @ 18')				21	21.6	105.3	*1.5
20	6		(wet @ 20')				34	18.7	105.5	*1.5
				Bottom of Boring at 21 1/2'.						
25	8									
30	9									

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APPENDIX B

Test Pit Logs

DRAFT

6826.1.001.01
June 29, 2005

SULLENGER RANCH
ANTIOCH, CALIFORNIA

TEST PIT LOGS

Test Pit Number	Depth (Feet)	Description
TP-1	0 – 3	CLAY (CL-CH), dark brown, medium stiff to stiff, moist, 1-2" desiccation cracks at surface, colluvium.
	3 – 4.5	SILTY CLAY (CL), brown, stiff, moist, trace organics, colluvium.
	4.5 – 6	SANDSTONE, light yellowish brown, friable, thick bedding, highly weathered.
	6 – 6.5	CLAYSTONE, light brown, moist, interbed.
	6.5 – 8.5	SANDSTONE, light yellowish brown, moderately strong, thick to massive bedding, fine-grained sand, slightly weathered.
Bottom of test pit at 8.5'. No groundwater encountered.		
TP-2	0 – 4	CLAY (CL-CH), dark brown, stiff, moist, desiccation cracks at surface, colluvium.
	4 – 5	SILTY CLAY (CL), brown, stiff, moist, trace organics, colluvium.
	5 – 7	SANDSTONE, light brownish gray, friable, thick bedding, fine-grained sand.
	7 – 8	CLAYSTONE, grayish brown, moist, interbed.
	8 – 11	SANDSTONE, olive grayish brown, friable, thick bedding, moderate weathering.
Bottom of test pit at 11'. No groundwater encountered.		
TP-3	0 – 4	CLAY (CL-CH), dark brown, stiff, moist, colluvium.
	4 – 5	SILTY CLAY (CL), grayish brown, stiff to very stiff, moist, colluvium.
	5 – 6	CLAYSTONE, light gray, friable, very closely fractured, thin bedding, deep to moderate weathering.

SULLENGER RANCH
ANTIOCH, CALIFORNIA

TEST PIT LOGS

Test Pit Number	Depth (Feet)	Description
	6 - 9	CLAYSTONE, gray, moderately strong, closely fractured, thick bedding, slightly weathered. Bottom of test pit at 9'. No groundwater encountered.
TP-4	0 - 9	CLAY (CL), dark brown, stiff to very stiff, moist, colluvium.
	9 - 12	CLAYSTONE, brownish gray, friable, closely to very closely fractured, thick bedding, moderate weathering. Bottom of test pit at 12'. No groundwater encountered.
TP-5	0 - 3	CLAY (CL), dark olive brown, stiff to very stiff, moist, colluvium.
	3 - 4	SANDSTONE, light olive brown, weak to friable, thin bedding, deep to moderate weathering, fine-grained sand.
	4 - 8	CLAYSTONE, olive grayish brown, friable, very closely fractured, thick bedding, moderate weathering. Bottom of test pit at 8'. No groundwater encountered.
TP-6	0 - 6	CLAY (CL), dark olive brown, stiff, moist, colluvium, 2-3" desiccation cracks at surface.
	6 - 8	CLAYSTONE, brown and white mottled, weak to friable, very closely fractured, thin bedding, deep to moderate weathering, calcium carbonate deposits within bedrock fractures.
	8 - 9	SANDSTONE, gray and white, friable, closely to very closely fractured, thin bedding, deep to moderate weathering.
	9 - 10	CLAYSTONE, olive gray and white, friable, closely fractured, thick bedding, moderate weathering. Bottom of test pit at 10'. No groundwater encountered.

SULLENGER RANCH
ANTIOCH, CALIFORNIA

TEST PIT LOGS

Test Pit Number	Depth (Feet)	Description
TP-7	0 – 1.5	CLAY (CL), dark olive brown, stiff to very stiff, moist, colluvium, 3-6" fractures at surface.
	1.5 – 3.5	CLAYSTONE, brown and white mottled, friable, closely to very closely fractured, thin bedding, deep to moderate weathering.
	3.5 – 5	SANDSTONE, brownish gray, moderately strong, widely fractured, thin bedding, moderate weathering.
	5 – 8.5	CLAYSTONE, reddish brown, friable, very closely fractured, thick bedding,
Bottom of test pit at 8.5'. No groundwater encountered.		
TP-8	0 – 1	SILTY CLAY (CL), dark olive brown, stiff, moist, colluvium.
	1 – 4	SANDSTONE, very light brown, friable, closely fractured, thick bedding, deep weathering.
	4 – 8	SANDSTONE, light brown, moderately strong, widely fractured, very thick to massive bedding.
Bottom of test pit at 10'. No groundwater encountered.		
TP-9	0 – 1	SILTY CLAY (CL), olive brown, stiff, slightly moist, colluvium.
	1 – 3	SANDSTONE, light gray, friable, closely fractured, thick bedding, deep to moderate weathering.
	3 – 4	CLAYSTONE, light gray, friable, closely fractured, thin bedding, deep to moderate weathering.
	4 – 8	CLAYSTONE, gray and brown, stratified, friable to moderately strong, closely fractured, thin to very thin bedding, moderate weathering.
Bottom of test pit at 8'. No groundwater encountered.		

SULLENGER RANCH
 ANTIOCH, CALIFORNIA

TEST PIT LOGS

Test Pit Number	Depth (Feet)	Description
TP-10	0 - 1	CLAY (CL), olive brown, slightly moist, colluvium.
	1 - 8	SANDSTONE, light brown, moderately strong, very widely fractured, very thick bedding, moderate weathering.
	8 - 15	CLAYSTONE, gray and reddish brown, stratified, moderately strong, closely fractured, thin bedding, 6-12" sandstone interbeds.
Bottom of test pit at 15'. No groundwater encountered.		
TP-11	0 - 1.5	CLAY (CL), dark olive brown, stiff, moist, colluvium.
	1.5 - 4.5	SANDSTONE, light gray, friable, moderately fractured, thin bedding, moderate weathering.
	4.5 - 9	CLAYSTONE, olive gray and reddish brown, stratified, friable to moderately strong, moderately fractured, thin bedding, moderate weathering.
Bottom of test pit at 9'. No groundwater encountered.		
TP-12	0 - 4	CLAY (CL-CH), dark brown, stiff, moist, alluvium.
	4 - 6.5	SANDSTONE, Light grayish brown, friable, massive, moderate weathering.
Bottom of test pit at 6.5'. No groundwater encountered.		

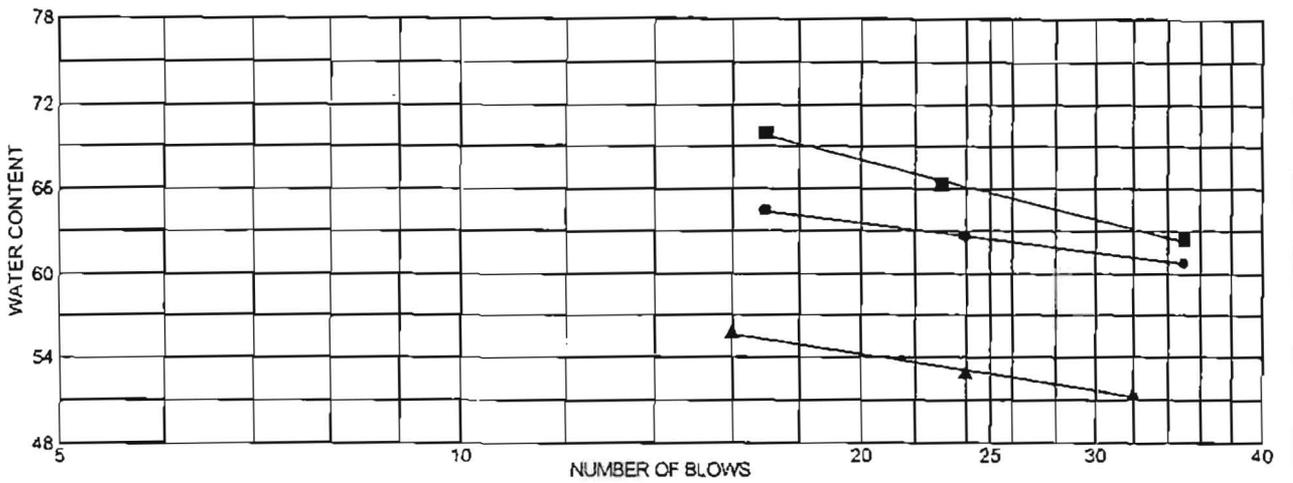
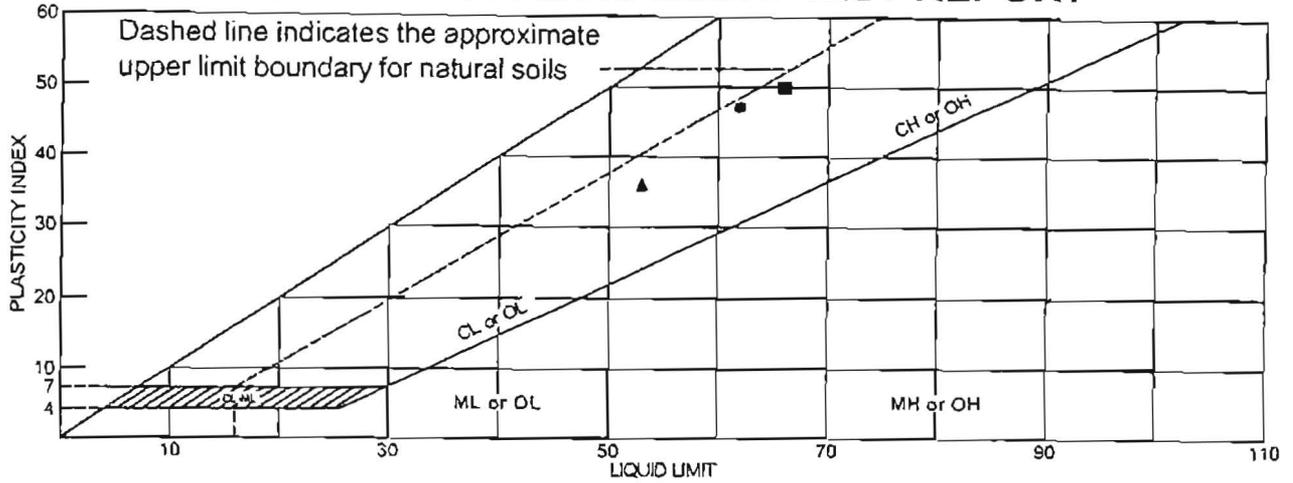
APPENDIX C

Laboratory Test Results

DRAFT

6826.1.001.01
June 29, 2005

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Light olive brown Clay. Trace sand.	62	15	47			CH
■	Olive brown Clay. Trace sand.	66	16	50			CH
▲	Very dark gray silty Clay to Clay with sand	53	17	36			CL-CH

Project No. 6826.1.001.01 Client:

Project: Sullinger Ranch, Deer Valley Road, Antioch CA

● Source: PI

Sample No.: 1-B2 @ 21'

■ Source: PI

Sample No.: 1-B4 @ 2'

▲ Source: PI

Sample No.: 1-B3 @ 25'10"

Remarks:

● 1-B2 @ 21'

■ 1-B4 @ 2'

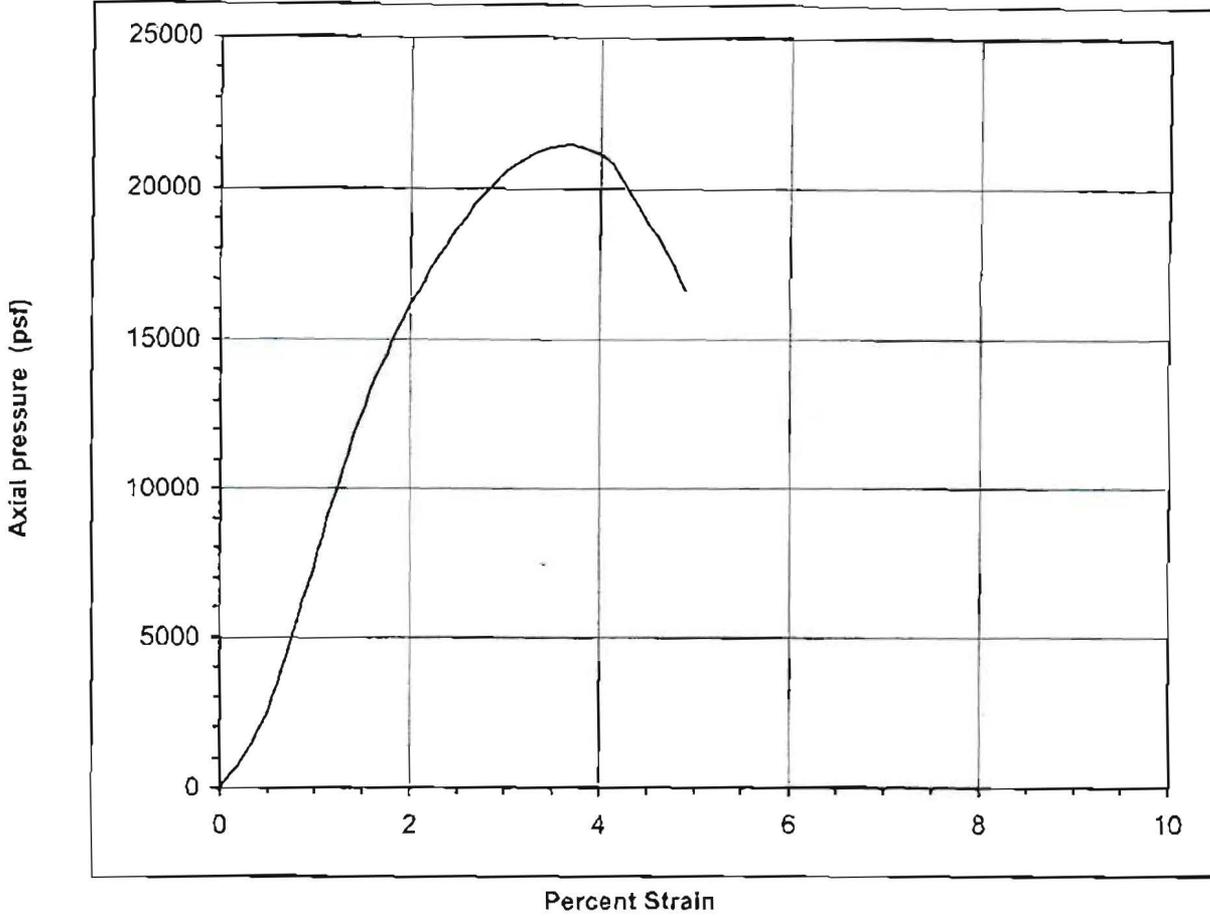
▲ 1-B3 @ 25'10"

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GEOTECHNICAL AND
ENVIRONMENTAL CONSULTANTS
MATERIALS TESTING

Plate

**Unconfined Compression Test
ASTM Test Method D2166**



Unconfined Compressive Strength: 21420 psf 10.7 tsf

Sample Description: Very dark grayish brown silty Clay with sand

Initial Diameter:	2.420 In.	Sample Number:	1-B3 @2
Initial Height:	5.00 In.	Dry Unit Weight:	109.7 pcf
Strain Rate:	1.710 %/min	Molsture Content:	13.5 %
Total Strain:	4.90 %	Depth of Sample:	2.0 ft.

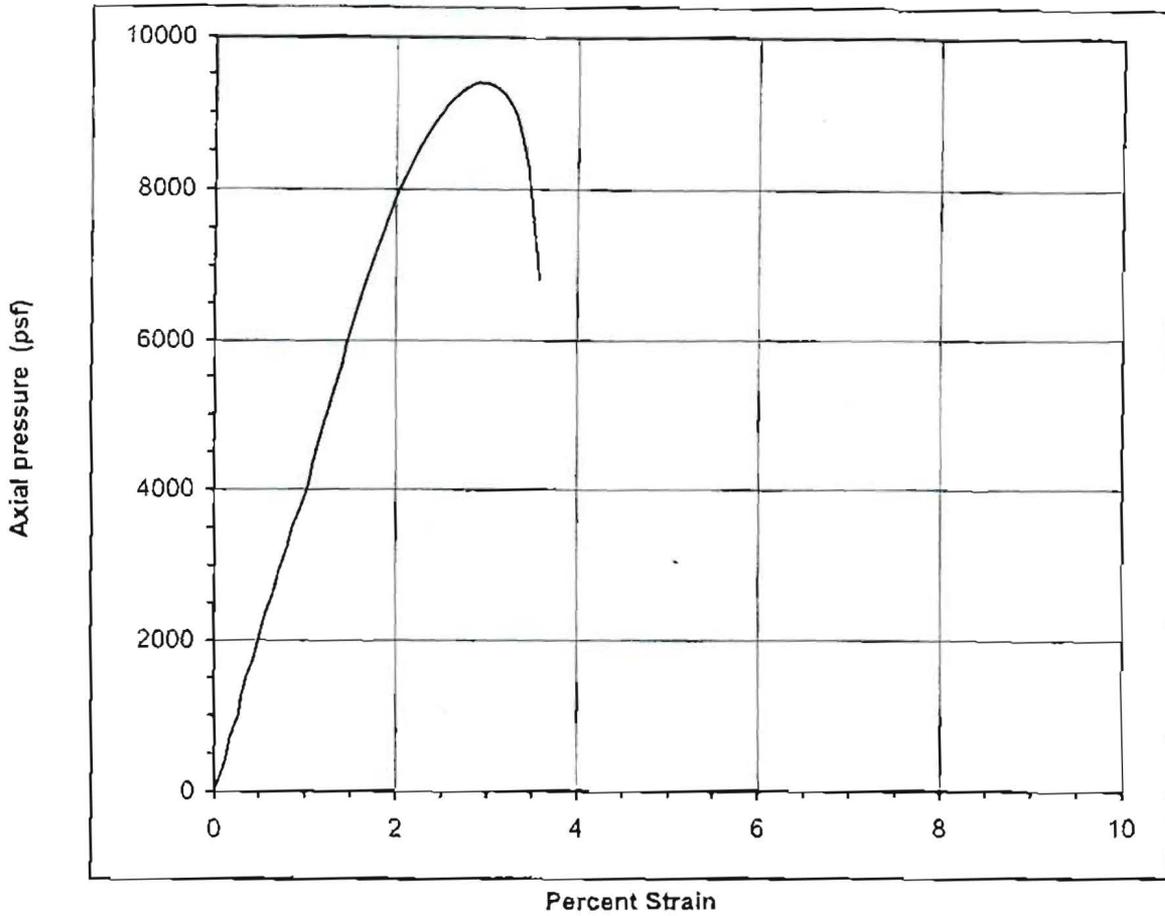
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INCORPORATED

SULLENGER RANCH
Antioch, California

Job No.:	6826.1.001.01
Sample Number:	1-B3 @2
Date:	6/27/2005

Figure No.

**Unconfined Compression Test
ASTM Test Method D2166**



Unconfined Compressive Strength: 9380 psf 4.7 tsf

Sample Description: Olive brown clayey Sand

Initial Diameter:	2.420 in.	Sample Number:	1-B3@6
Initial Height:	4.70 in.	Dry Unit Weight:	103.4 pcf
Strain Rate:	2.011 %/min	Moisture Content:	12.7 %
Total Strain:	3.59 %	Depth of Sample:	6.0 ft.

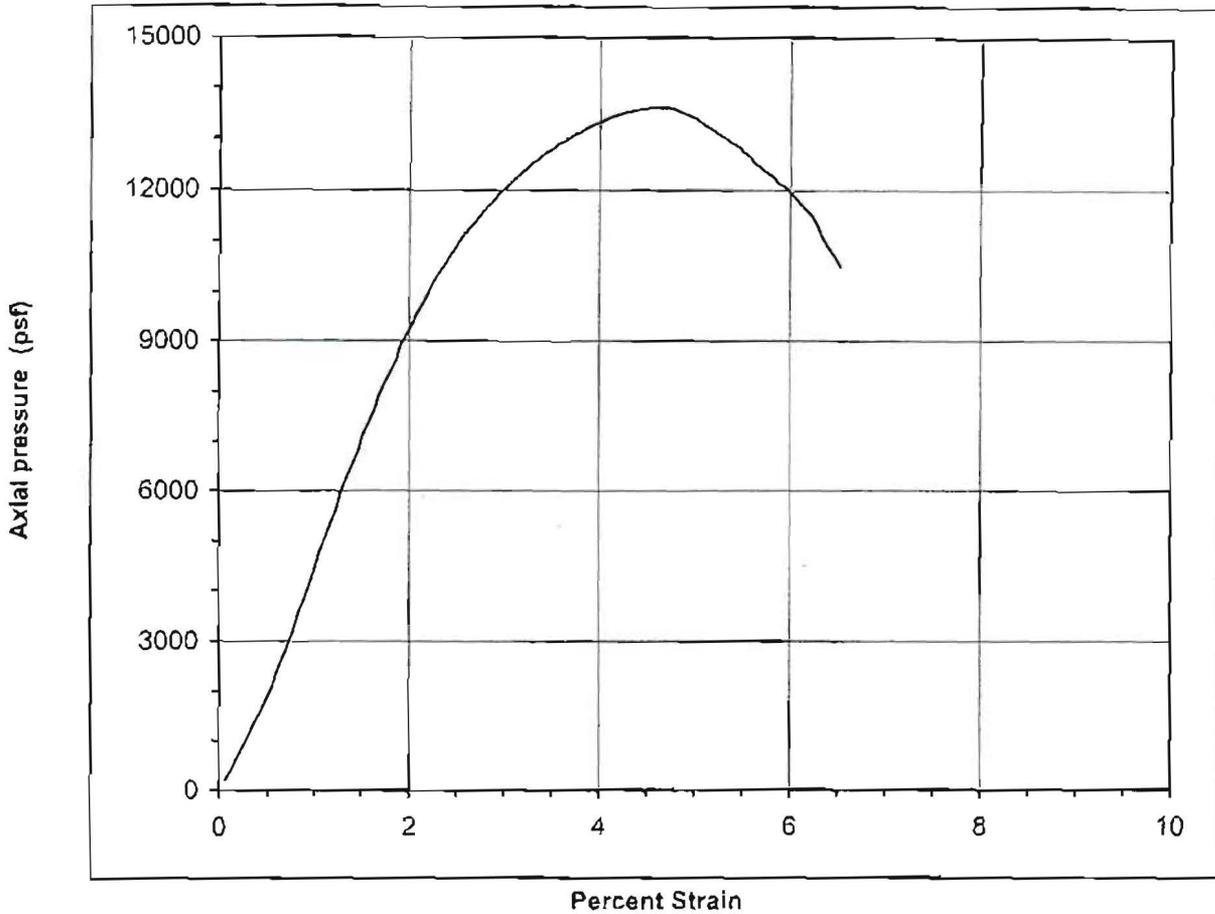
ENGEO
INCORPORATED

SULLENGER RANCH
Antioch, California

Job No.:	6826.1.001.01
Sample Number:	1-B3@6
Date:	6/27/2005

Figure No.

**Unconfined Compression Test
ASTM Test Method D2166**



Unconfined Compressive Strength: 13580 psf 6.8 tsf

Sample Description: Mottled dark grayish brown and olive brown Clay with sand

Initial Diameter:	2.420 in.	Sample Number:	1-B5@2
Initial Height:	5.00 in.	Dry Unit Weight:	110.5 pcf
Strain Rate:	1.706 %/min	Moisture Content:	15.5 %
Total Strain:	6.53 %	Depth of Sample:	2.0 ft.

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SULLENGER RANCH
Antioch, California

Job No.:	6826.1.001.01
Sample Number:	1-B5@2
Date:	6/27/2005

Figure No.

APPENDIX D

Guide Contract Specifications

DRAFT

6826.1.001.01
June 29, 2005

GUIDE CONTRACT SPECIFICATIONS

PART I - EARTHWORK

PREFACE

These specifications are intended as a guide for the earthwork performed at the subject development project. If there is a conflict between these specifications (including the recommendations of the geotechnical report) and agency or code requirements, it should be brought to the attention of ENGEO and Owner prior to contract bidding.

PART 1 - GENERAL

1.01 WORK COVERED

- A. Grading, excavating, filling and backfilling, including trenching and backfilling for utilities as necessary to complete the Project as indicated on the Drawings.
- B. Subsurface drainage as indicated on the Drawings.

1.02 CODES AND STANDARDS

- A. Excavating, trenching, filling, backfilling, and grading work shall meet the applicable requirements of the Uniform Building Code and the standards and ordinances of state and local governing authorities.

1.03 SUBSURFACE SOIL CONDITIONS

- A. The Owners' Geotechnical Exploration report is available for inspection by bidder or Contractor. The Contractor shall refer to the findings and recommendations of the Geotechnical Exploration report in planning and executing his work.

1.04 DEFINITIONS

- A. Fill: All soil, rock, or soil-rock materials placed to raise the grades of the site or to backfill excavations.
- B. Backfill: All soil, rock or soil-rock material used to fill excavations and trenches.
- C. On-Site Material: Soil and/or rock material which is obtained from the site.

6826.1.001.01
June 29, 2005

- D. Imported Material: Soil and/or rock material which is brought to the site from off-site areas.
- E. Select Material: On-site and/or imported material which is approved by ENGEO as a specific-purpose fill.
- F. Engineered Fill: Fill upon which ENGEO has made sufficient observations and tests to confirm that the fill has been placed and compacted in accordance with specifications and requirements.
- G. Degree of Compaction or Relative Compaction: The ratio, expressed as a percentage, of the in-place dry density of the fill and backfill material as compacted in the field to the maximum dry density of the same material as determined by ASTM D-1557 or California 216 compaction test method.
- H. Optimum Moisture: Water content, percentage by dry weight, corresponding to the maximum dry density as determined by ASTM D-1557.
- I. ENGEO: The project geotechnical engineering consulting firm, its employees or its designated representatives.
- J. Drawings: All documents, approved for construction, which describe the Work.

1.05 OBSERVATION AND TESTING

- A. All site preparation, cutting and shaping, excavating, filling, and backfilling shall be carried out under the observation of ENGEO, employed and paid for by the Owners. ENGEO will perform appropriate field and laboratory tests to evaluate the suitability of fill material, the proper moisture content for compaction, and the degree of compaction achieved. Any fill that does not meet the specification requirements shall be removed and/or reworked until the requirements are satisfied.
- B. Cutting and shaping, excavating, conditioning, filling, and compacting procedures require approval of ENGEO as they are performed. Any work found unsatisfactory or any work disturbed by subsequent operations before approval is granted shall be corrected in an approved manner as recommended by ENGEO.
- C. Tests for compaction will be made in accordance with test procedures outlined in ASTM D-1557, as applicable. Field testing of soils or compacted fill shall conform with the applicable requirements of ASTM D-2922.
- D. All authorized observation and testing will be paid for by the Owners.

1.06 SITE CONDITIONS

- A. Excavating, filling, backfilling, and grading work shall not be performed during unfavorable weather conditions. When the work is interrupted by rain, excavating, filling, backfilling, and grading work shall not be resumed until the site and soil conditions are suitable.
- B. Contractor shall take the necessary measures to prevent erosion of freshly filled, backfilled, and graded areas until such time as permanent drainage and erosion control measures have been installed.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Contractor shall furnish all materials, tools, equipment, facilities, and services as required for performing the required excavating, filling, backfilling, and grading work, and trenching and backfilling for utilities.

2.02 SOIL MATERIALS

- A. Fill
 - 1. Material to be used for engineered fill and backfill shall be free from organic matter and other deleterious substances, and of such quality that it will compact thoroughly without excessive voids when watered and rolled. Excavated on-site material will be considered suitable for engineered fill and backfill if it contains no more than 3 percent organic matter, is free of debris and other deleterious substances and conforms to the requirements specified above. Rocks of maximum dimension in excess of two-thirds of the lift thickness shall be removed from any fill material to the satisfaction of ENGEO.
 - 2. Excavated earth material which is suitable for engineered fill or backfill, as determined by ENGEO, shall be conditioned for reuse and properly stockpiled as required for later filling and backfilling operations. Conditioning shall consist of spreading material in layers not to exceed 8 inches and raking free of debris and rubble. Rocks and aggregate exceeding the allowed largest dimension, and deleterious material shall be removed from the site and disposed off site in a legal manner.

3. ENGEO shall be immediately notified if potential hazardous materials or suspect soils exhibiting staining or odor are encountered. Work activities shall be discontinued within the area of potentially hazardous materials. ENGEO environmental personnel will conduct an assessment of the suspect hazardous material to determine the appropriate response and mitigation. Regulatory agencies may also be contacted to request concurrence and oversight. *ENGEO will rely on the Owner, or a designated Owner's representative, to make necessary notices to the appropriate regulatory agencies. The Owner may request ENGEO's assistance in notifying regulatory agencies, provided ENGEO receives Owner's written authorization to expand its scope of services.*
 4. ENGEO shall be notified at least 48 hours prior to the start of filling and backfilling operations so that it may evaluate samples of the material intended for use as fill and backfill. All materials to be used for filling and backfilling require the approval of ENGEO.
- B. Import Material: Where conditions require the importation of fill material, the material shall be an inert, nonexpansive soil or soil-rock material free of organic matter and meeting the following requirements unless otherwise approved by ENGEO.

Gradation (ASTM D-421):	<u>Sieve Size</u>	<u>Percent Passing</u>
	2-inch	100
	#200	15 - 70
Plasticity (ASTM D-4318):	<u>Liquid Limit</u>	<u>Plasticity Index</u>
	< 30	< 12
Swell Potential (ASTM D-4546B): (at optimum moisture)	<u>Percent Heave</u>	<u>Swell Pressure</u>
	< 2 percent	< 300 psf
Resistance Value (ASTM D-2844):	Minimum 25	
Organic Content (ASTM D-2974):	Less than 2 percent	

A sample of the proposed import material should be submitted to ENGEO for evaluation prior to delivery at the site.

2.03 SAND

- A. Sand for sand cushion under slabs and for bedding of pipe in utility trenches shall be a clean and graded, washed sand, free from clay or organic material, suitable for the intended purpose with 90 to 100 percent passing a No. 4 U.S. Standard Sieve, not more than 5 percent passing a No. 200 U.S. Standard Sieve, and generally conforming to ASTM C33 for fine aggregate.

2.04 AGGREGATE DRAINAGE FILL

- A. Aggregate drainage fill under concrete slabs and paving shall consist of broken stone, crushed or uncrushed gravel, clean quarry waste, or a combination thereof. The aggregate shall be free from fines, vegetable matter, loam, volcanic tuff, and other deleterious substances. It shall be of such quality that the absorption of water in a saturated surface dry condition does not exceed 3 percent of the oven dry weight of the samples.
- B. Aggregate drainage fill shall be of such size that the percentage composition by dry weight as determined by laboratory sieves (U. S. Series) will conform to the following grading:

<u>Sieve Size</u>	<u>Percentage Passing Sieve</u>
1½-inches	100
1-inch	90 - 100
#4	0 - 5

2.05 SUBDRAINS

- A. Perforated subdrain pipe of the required diameter shall be installed as shown on the drawings. The pipe(s) shall also conform to these specifications unless otherwise specified by ENGEO in the field.

Subdrain pipe shall be manufactured in accordance with one of the following requirements:

Design depths less than 30 feet

- Perforated ABS Solid Wall SDR 35 (ASTM D-2751)
- Perforated PVC Solid Wall SDR 35 (ASTM D-3034)
- Perforated PVC A-2000 (ASTM F949)
- Perforated Corrugated HDPE double-wall (AASHTO M-252 or M-294, Caltrans Type S, 50 psi minimum stiffness)

Design depths less than 50 feet

- Perforated PVC SDR 23.5 Solid Wall (ASTM D-3034)
- Perforated Sch. 40 PVC Solid Wall (ASTM-1785)
- Perforated ABS SDR 23.5 Solid Wall (ASTM D-2751)
- Perforated ABS DWV/Sch. 40 (ASTM D-2661 and D-1527)
- Perforated Corrugated HDPE double-wall (AASHTO M-252 or M-294, Caltrans Type S, 70 psi minimum stiffness)

Design depths less than 70 feet

- Perforated ABS Solid Wall SDR 15.3 (ASTM D-2751)
- Perforated Sch. 80 PVC (ASTM D-1785)
- Perforated Corrugated Aluminum (ASTM B-745)

- B. Permeable Material (Class 2): Class 2 permeable material for filling trenches under, around, and over subdrains, behind building and retaining walls, and for pervious blankets shall consist of clean, coarse sand and gravel or crushed stone, conforming to the following grading requirements:

<u>Sieve Size</u>	<u>Percentage Passing Sieve</u>
1-inch	100
¾-inch	90 - 100
⅜-inch	40 - 100
#4	25 - 40
#8	18 - 33
#30	5 - 15
#50	0 - 7
#200	0 - 3

- C. Filter Fabric: All filter fabric shall meet the following Minimum Average Roll Values unless otherwise specified by ENGEO.

Grab Strength (ASTM D-4632).....	180 lbs
Mass Per Unit Area (ASTM D-4751)	6 oz/yd ²
Apparent Opening Size (ASTM D-4751)	70-100 U.S. Std. Sieve
Flow Rate (ASTM D-4491) 80 gal/min/ft ²	
Puncture Strength (ASTM D-4833)	80 lbs

- D. Vapor Retarder: Vapor Retarders shall consist of PVC, LDPE or HDPE impermeable sheeting at least 10 mils thick..

2.06 PERMEABLE MATERIAL (Class 1; Type A)

- A. Class 1 permeable material to be used in conjunction with filter fabric for backfilling of subdrain excavations shall conform to the following grading requirements:

<u>Sieve Size</u>	<u>Percentage Passing Sieve</u>
¾-inch	100
½-inch	95 - 100
⅜-inch	70 - 100
#4	0 - 55
#8	0 - 10
#200	0 - 3

PART 3 - EXECUTION

3.01 STAKING AND GRADES

- A. Contractor shall lay out all his work, establish all necessary markers, bench marks, grading stakes, and other stakes as required to achieve design grades.

3.02 EXISTING UTILITIES

- A. Contractor shall verify the location and depth (elevation) of all existing utilities and services before performing any excavation work.

3.03 EXCAVATION

- A. Contractor shall perform excavating as indicated and required for concrete footings, drilled piers, foundations, floor slabs, concrete walks, and site leveling and grading, and provide shoring, bracing, underpinning, cribbing, pumping, and planking as required. The bottoms of excavations shall be firm undisturbed earth, clean and free from loose material, debris, and foreign matter.
- B. Excavations shall be kept free from water at all times. Adequate dewatering equipment shall be maintained at the site to handle emergency situations until concrete or backfill is placed.

- C. Unauthorized excavations for footings shall be filled with concrete to required elevations, unless other methods of filling are authorized by ENGEO.
- D. Excavated earth material which is suitable for engineered fill or backfill, as determined by ENGEO, shall be conditioned for reuse and properly stockpiled for later filling and backfilling operations as specified under Section 2.02, "Soil Materials."
- E. Abandoned sewers, piping, and other utilities encountered during excavating shall be removed and the resulting excavations shall be backfilled with engineered fill as required by ENGEO.
- F. Any active utility lines encountered shall be reported immediately to the Owner's Representative and authorities involved. The Owner and proper authorities shall be permitted free access to take the measures deemed necessary to repair, relocate, or remove the obstruction as determined by the responsible authority or Owner's Representative.

3.04 SUBGRADE PREPARATION

- A. All brush and other rubbish, as well as trees and root systems not marked for saving, shall be removed from the site and legally disposed of.
- B. Any existing structures, foundations, underground storage tanks, or debris must be removed from the site prior to any building, grading, or fill operations. Septic tanks, including all drain fields and other lines, if encountered, must be totally removed. The resulting depressions shall be properly prepared and filled to the satisfaction of ENGEO.
- C. Vegetation and organic topsoil shall be removed from the surface upon which the fill is to be placed and either removed and legally disposed of or stockpiled for later use in approved landscape areas. The surface shall then be scarified to a depth of at least eight inches until the surface is free from ruts, hummocks, or other uneven features which would tend to prevent uniform compaction by the equipment to be used.
- D. After the foundation for the fill has been cleared and scarified, it shall be made uniform and free from large clods. The proper moisture content must be obtained by adding water or aerating. The foundation for the fill shall be compacted at the proper moisture content to a relative compaction as specified herein.

3.05 ENGINEERED FILL

- A. **Select Material:** Fill material shall be "Select" or "Imported Material" as previously specified.
- B. **Placing and Compacting:** Engineered fill shall be constructed by approved and accepted methods. Fill material shall be spread in uniform lifts not exceeding 8 inches in uncompacted thickness. Each layer shall be spread evenly, and thoroughly blade-mixed to obtain uniformity of material. Fill material which does not contain sufficient moisture as specified by ENGEO shall be sprinkled with water; if it contains excess moisture it shall be aerated or blended with drier material to achieve the proper water content. Select material and water shall then be thoroughly mixed before being compacted.
- C. Unless otherwise specified in the Geotechnical Exploration report, each layer of spread select material shall be compacted to at least 90 percent relative compaction at a moisture content of at least three percent above the optimum moisture content. Minimum compaction in all keyways shall be a minimum of 95 percent with a minimum moisture content of at least 1 percentage point above optimum.
- D. Unless otherwise specified in the Geotechnical Exploration report or otherwise required by the local authorities, the upper 6 inches of engineered fill in areas to receive pavement shall be compacted to at least 95 percent relative compaction with a minimum moisture content of at least 3 percentage points above optimum.
- E. **Testing and Observation of Fill:** The work shall consist of field observation and testing to determine that each layer has been compacted to the required density and that the required moisture is being obtained. Any layer or portion of a layer that does not attain the compaction required shall be reworked until the required density is obtained.
- F. **Compaction:** Compaction shall be by sheepfoot rollers, multiple-wheel steel or pneumatic-tired rollers or other types of acceptable compaction equipment. Rollers shall be of such design that they will be able to compact the fill to the specified compaction. Rolling shall be accomplished while the fill material is within the specified moisture content range. Rolling of each layer must be continuous so that the required compaction may be obtained uniformly throughout each layer.
- G. Fill slopes shall be constructed by overfilling the design slopes and later cutting back the slopes to the design grades. No loose soil will be permitted on the faces of the finished slopes.

- H. Strippings and topsoil shall be stockpiled as approved by Owner, then placed in accordance with ENGEO's recommendations to a minimum thickness of 6 inches and a maximum thickness of 12 inches over exposed open space cut slopes which are 3:1 or flatter, and track walked to the satisfaction of ENGEO.
- I. Final Prepared Subgrade: Finish blading and smoothing shall be performed as necessary to produce the required density, with a uniform surface, smooth and true to grade.

3.06 BACKFILLING

- A. Backfill shall not be placed against footings, building walls, or other structures until approved by ENGEO.
- B. Backfill material shall be Select Material as specified for engineered fill.
- C. Backfill shall be placed in 6-inch layers, leveled, rammed, and tamped in place. Each layer shall be compacted with suitable compaction equipment to 90 percent relative compaction at a moisture content of at least 3 percent above optimum.

3.07 TRENCHING AND BACKFILLING FOR UTILITIES

- A. Trenching:
 - 1. Trenching shall include the removal of material and obstructions, the installation and removal of sheeting and bracing and the control of water as necessary to provide the required utilities and services.
 - 2. Trenches shall be excavated to the lines, grades, and dimensions indicated on the Drawings. Maximum allowable trench width shall be the outside diameter of the pipe plus 24 inches, inclusive of any trench bracing.
 - 3. When the trench bottom is a soft or unstable material as determined by ENGEO, it shall be made firm and solid by removing said unstable material to a sufficient depth and replacing it with on-site material compacted to 90 percent minimum relative compaction.
 - 4. Where water is encountered in the trench, the contractor must provide materials necessary to drain the water and stabilize the bed.

B. Backfilling:

1. Trenches must be backfilled within 2 days of excavation to minimize desiccation.
2. Bedding material shall be sand and shall not extend more than 6 inches above any utility lines.
3. Backfill material shall be select material.
4. Trenches shall be backfilled as indicated or required and compacted with suitable equipment to 90 percent minimum relative compaction at the required moisture content.

3.08 SUBDRAINS

- A. Trenches for subdrain pipe shall be excavated to a minimum width equal to the outside diameter of the pipe plus at least 12 inches and to a depth of approximately 2 inches below the grade established for the invert of the pipe, or as indicated on the Drawings.
- B. The space below the pipe invert shall be filled with a layer of Class 2 permeable material, upon which the pipe shall be laid with perforations down. Sections shall be joined as recommended by the pipe manufacturer.
- C. Rocks, bricks, broken concrete, or other hard material shall not be used to give intermediate support to pipes. Large stones or other hard objects shall not be left in contact with the pipes.
- D. Excavations for subdrains shall be filled as required to fill voids and prevent settlement without damaging the subdrain pipe. Alternatively, excavations for subdrains may be filled with Class 1 permeable material (as defined in Section 2.06) wrapped in Filter Fabric (as defined in Section 2.05).

3.09 AGGREGATE DRAINAGE FILL

- A. ENGEO shall approve finished subgrades before aggregate drainage fill is installed.
- B. Pipes, drains, conduits, and any other mechanical or electrical installations shall be in place before any aggregate drainage fill is placed. Backfill at walls to elevation of drainage fill shall be in place and compacted.

- C. Aggregate drainage fill under slabs and concrete paving shall be the minimum uniform thickness after compaction of dimensions indicated on Drawings. Where not indicated, minimum thickness after compaction shall be 4 inches.
- D. Aggregate drainage fill shall be rolled to form a well-compacted bed.
- E. The finished aggregate drainage fill must be observed and approved by ENGEO before proceeding with any subsequent construction over the compacted base or fill.

3.10 SAND CUSHION

- A. A sand cushion shall be placed over the vapor retarder membrane under concrete slabs on grade. Sand cushion shall be placed in uniform thickness as indicated on the Drawings. Where not indicated, the thickness shall be 2 inches.

3.11 FINISH GRADING

- A. All areas must be finish graded to elevations and grades indicated on the Drawings. In areas to receive topsoil and landscape planting, finish grading shall be performed to a uniform 6 inches below the grades and elevations indicated on the Drawings, and brought to final grade with topsoil.

3.12 DISPOSAL OF WASTE MATERIALS

- A. Excess earth materials and debris shall be removed from the site and disposed of in a legal manner. Location of dump site and length of haul are the Contractor's responsibility.

PART II - GEOGRID SOIL REINFORCEMENT

1. DESCRIPTION:

Work shall consist of furnishing geogrid soil reinforcement for use in construction of reinforced soil slopes and retention systems.

2. GEOGRID MATERIAL:

2.1 The specific geogrid material shall be preapproved by ENGEO.

2.2 The geogrid shall be a regular network of integrally connected polymer tensile elements with aperture geometry sufficient to permit significant mechanical interlock with the surrounding soil or rock. The geogrid structure shall be dimensionally stable and able to retain its geometry under construction stresses and shall have high resistance to damage during construction, to ultraviolet degradation, and to all forms of chemical and biological degradation encountered in the soil being reinforced.

2.3 The geogrids shall have an Allowable Strength (T_a) and Pullout Resistance, for the soil type(s) indicated, as listed in Table I.

2.4 Certifications: The Contractor shall submit a manufacturer's certification that the geogrids supplied meet the respective index criteria set when geogrid was approved by ENGEO, measured in full accordance with all test methods and standards specified. In case of dispute over validity of values, the Contractor will supply test data from an ENGEO-approved laboratory to support the certified values submitted.

3. CONSTRUCTION:

3.1 Delivery, Storage, and Handling: Contractor shall check the geogrid upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the geogrid shall be protected from temperatures greater than 140 °F, mud, dirt, dust, and debris. Manufacturer's recommendations in regard to protection from direct sunlight must also be followed. At the time of installation, the geogrid will be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be repaired by placing a patch over the damaged area. Any geogrid damaged during storage or installation shall be replaced by the Contractor at no additional cost to the owner.

- 3.2 On-Site Representative: Geogrid material suppliers shall provide a qualified and experienced representative on site at the initiation of the project, for a minimum of three days, to assist the Contractor and ENGEO personnel at the start of construction. If there is more than one slope on a project, this criterion will apply to construction of the initial slope only. The representative shall also be available on an as-needed basis, as requested by ENGEO, during construction of the remaining slope(s).
- 3.3 Geogrid reinforcement may be joined with mechanical connections or overlaps as recommended and approved by the Manufacturer. Joints shall not be placed within 6 feet of the slope face, within 4 feet below top of slope, nor horizontally or vertically adjacent to another joint.
- 3.4 Geogrid Placement: The geogrid reinforcement shall be installed in accordance with the manufacturer's recommendations. The geogrid reinforcement shall be placed within the layers of the compacted soil as shown on the plans or as directed.

The geogrid reinforcement shall be placed in continuous longitudinal strips in the direction of main reinforcement. However, if the Contractor is unable to complete a required length with a single continuous length of geogrid, a joint may be made with the Manufacturer's approval. Only one joint per length of geogrid shall be allowed. This joint shall be made for the full width of the strip by using a similar material with similar strength. Joints in geogrid reinforcement shall be pulled and held taut during fill placement.

Adjacent strips, in the case of 100 percent coverage in plan view, need not be overlapped. The minimum horizontal coverage is 50 percent, with horizontal spacings between reinforcement no greater than 40 inches. Horizontal coverage of less than 100 percent shall not be allowed unless specifically detailed in the construction drawings.

Adjacent rolls of geogrid reinforcement shall be overlapped or mechanically connected where exposed in a wrap around face system, as applicable.

The Contractor may place only that amount of geogrid reinforcement required for immediately pending work to prevent undue damage. After a layer of geogrid reinforcement has been placed, the next succeeding layer of soil shall be placed and compacted as appropriate. After the specified soil layer has been placed, the next geogrid reinforcement layer shall be installed. The process shall be repeated for each subsequent layer of geogrid reinforcement and soil.

Geogrid reinforcement shall be placed to lay flat and pulled tight prior to backfilling. After a layer of geogrid reinforcement has been placed, suitable means, such as pins or small piles of soil, shall be used to hold the geogrid reinforcement in position until the subsequent soil layer can be placed.

Under no circumstances shall a track-type vehicle be allowed on the geogrid reinforcement before at least six inches of soil have been placed. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and the geogrid reinforcement. If approved by the Manufacturer, rubber-tired equipment may pass over the geosynthetic reinforcement at slow speeds, less than 10 mph. Sudden braking and sharp turning shall be avoided.

During construction, the surface of the fill should be kept approximately horizontal. Geogrid reinforcement shall be placed directly on the compacted horizontal fill surface. Geogrid reinforcements are to be placed within three inches of the design elevations and extend the length as shown on the elevation view unless otherwise directed by ENGEO. Correct orientation of the geogrid reinforcement shall be verified by ENGEO.

<p align="center">Table I Allowable Geogrid Strength With Various Soil Types For Geosynthetic Reinforcement In Mechanically Stabilized Earth Slopes</p>			
<p align="center">(Geogrid Pullout Resistance and Allowable Strengths vary with reinforced backfill used due to soil anchorage and site damage factors. Guidelines are provided below.)</p>			
SOIL TYPE	MINIMUM ALLOWABLE STRENGTH, T, (lb/ft)*		
	GEOGRID Type I	GEOGRID Type II	GEOGRID Type III
A. Gravels, sandy gravels, and gravel-sand-silt mixtures (GW, GP, GC, GM & SP)**	2400	4800	7200
B. Well graded sands, gravelly sands, and sand-silt mixtures (SW & SM)**	2000	4000	6000
C. Silts, very fine sands, clayey sands and clayey silts (SC & ML)**	1000	2000	3000
D. Gravelly clays, sandy clays, silty clays, and lean clays (CL)**	1600	3200	4800
* All partial Factors of Safety for reduction of design strength are included in listed values. Additional factors of safety may be required to further reduce these design strengths based on site conditions.			
** Unified Soil Classifications.			

PART III - GEOTEXTILE SOIL REINFORCEMENT

1. DESCRIPTION:

Work shall consist of furnishing geotextile soil reinforcement for use in construction of reinforced soil slopes.

2. GEOTEXTILE MATERIAL:

- 2.1 The specific geotextile material and supplier shall be preapproved by ENGEO.
- 2.2 The geotextile shall have a high tensile modulus and shall have high resistance to damage during construction, to ultraviolet degradation, and to all forms of chemical and biological degradation encountered in the soil being reinforced.
- 2.3 The geotextiles shall have an Allowable Strength (T_a) and Pullout Resistance, for the soil type(s) indicated as listed in Table II.
- 2.4 Certification: The Contractor shall submit a manufacturer's certification that the geotextiles supplied meet the respective index criteria set when geotextile was approved by ENGEO, measured in full accordance with all test methods and standards specified. In case of dispute over validity of values, the Contractor will supply the data from an ENGEO-approved laboratory to support the certified values submitted.

3. CONSTRUCTION:

- 3.1 Delivery, Storage and Handling: Contractor shall check the geotextile upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the geotextile shall be protected from temperatures greater than 140 °F, mud, dirt, dust, and debris. Manufacturer's recommendations in regard to protection from direct sunlight must also be followed. At the time of installation, the geotextile will be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be repaired by placing a patch over the damaged area. Any geotextile damaged during storage or installation shall be replaced by the Contractor at no additional cost to the owner.

- 3.2 On-Site Representative: Geotextile material suppliers shall provide a qualified and experienced representative on site at the initiation of the project, for a minimum of three days, to assist the Contractor and ENGEO personnel at the start of construction. If there is more than one slope on a project, this criterion will apply to construction of the initial slope only. The representative shall also be available on an as-needed basis, as requested by ENGEO, during construction of the remaining slope(s).
- 3.3 Geotextile Placement: The geotextile reinforcement shall be installed in accordance with the manufacturer's recommendations. The geotextile reinforcement shall be placed within the layers of the compacted soil as shown on the plans or as directed.

The geotextile reinforcement shall be placed in continuous longitudinal strips in the direction of main reinforcement. Joints shall not be used with geotextiles.

Adjacent strips, in the case of 100 percent coverage in plan view, need not be overlapped. The minimum horizontal coverage is 50 percent, with horizontal spacings between reinforcement no greater than 40 inches. Horizontal coverage of less than 100 percent shall not be allowed unless specifically detailed in the construction drawings.

Adjacent rolls of geotextile reinforcement shall be overlapped or mechanically connected where exposed in a wrap around face system, as applicable.

The Contractor may place only that amount of geotextile reinforcement required for immediately pending work to prevent undue damage. After a layer of geotextile reinforcement has been placed, the succeeding layer of soil shall be placed and compacted as appropriate. After the specified soil layer has been placed, the next geotextile reinforcement layer shall be installed. The process shall be repeated for each subsequent layer of geotextile reinforcement and soil.

Geosynthetic reinforcement shall be placed to lay flat and be pulled tight prior to backfilling. After a layer of geotextile reinforcement has been placed, suitable means, such as pins or small piles of soil, shall be used to hold the geotextile reinforcement in position until the subsequent soil layer can be placed.

Under no circumstances shall a track-type vehicle be allowed on the geotextile reinforcement before at least six inches of soil has been placed. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and the geotextile reinforcement. If approved by the Manufacturer, rubber-tired equipment may pass over the geotextile reinforcement at slow speeds, less than 10 mph. Sudden braking and sharp turning shall be avoided.

During construction, the surface of the fill should be kept approximately horizontal. Geotextile reinforcement shall be placed directly on the compacted horizontal fill surface. Geotextile reinforcements are to be placed within three inches of the design elevations and extend the length as shown on the elevation view unless otherwise directed by ENGEO. Correct orientation of the geotextile reinforcement shall be verified by ENGEO.

Table II
Allowable Geotextile Strength
With Various Soil Types
For Geosynthetic Reinforcement In
Mechanically Stabilized Earth Slopes

(Geotextile Pullout Resistance and Allowable Strengths vary with reinforced backfill used due to soil anchorage and site damage factors. Guidelines are provided below.)

SOIL TYPE	MINIMUM ALLOWABLE STRENGTH, T_a (lb/ft)*		
	GEOTEXTILE Type I	GEOTEXTILE Type II	GEOTEXTILE Type III
A. Gravels, sandy gravels, and gravel-sand-silt mixtures (GW, GP, GC, GM & SP)**	2400	4800	7200
B. Well graded sands, gravelly sands, and sand-silt mixtures (SW & SM)**	2000	4000	6000
C. Silts, very fine sands, clayey sands and clayey silts (SC & ML)**	1000	2000	3000
D. Gravelly clays, sandy clays, silty clays, and lean clays (CL)**	1600	3200	4800

* All partial Factors of Safety for reduction of design strength are included in listed values. Additional factors of safety may be required to further reduce these design strengths based on site conditions.

** Unified Soil Classifications.

PART IV - EROSION CONTROL MAT OR BLANKET

1. DESCRIPTION:

Work shall consist of furnishing and placing a synthetic erosion control mat and/or degradable erosion control blanket for slope face protection and lining of runoff channels.

2. EROSION CONTROL MATERIALS:

2.1 The specific erosion control material and supplier shall be pre-approved by ENGEO.

2.2 Certification: The Contractor shall submit a manufacturer's certification that the erosion mat/blanket supplied meets the criteria specified when the material was approved by ENGEO. The manufacturer's certification shall include a submittal package of documented test results that confirm the property values. In case of a dispute over validity of values, the Contractor will supply property test data from an ENGEO-approved laboratory, to support the certified values submitted. Minimum average roll values, per ASTM D 4759, shall be used for conformance determinations.

3. CONSTRUCTION:

3.1 Delivery, Storage, and Handling: Contractor shall check the erosion control material upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the erosion mat shall be protected from temperatures greater than 140 °F, mud, dirt, and debris. Manufacturer's recommendations in regard to protection from direct sunlight must also be followed. At the time of installation, the erosion mat/blanket shall be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be removed by cutting OUT a section of the mat. The remaining ends should be overlapped and secured with ground anchors. Any erosion mat/blanket damaged during storage or installation shall be replaced by the Contractor at no additional cost to the Owner.

3.2 On-Site Representative: Erosion control material suppliers shall provide a qualified and experienced representative on site, for a minimum of one day, to assist the Contractor and ENGEO personnel at the start of construction. If there is more than one slope on a project, this criteria will apply to construction of the initial slope only. The representative shall be available on an as-needed basis, as requested by ENGEO, during construction of the remaining slope(s).

- 3.3 Placement: The erosion control material shall be placed and anchored on a smooth graded, firm surface approved by the Engineer. Anchoring terminal ends of the erosion control material shall be accomplished through use of key trenches. The material in the trenches shall be anchored to the soil on maximum 1½ foot centers. Topsoil, if required by construction drawings, placed over final grade prior to installation of the erosion control material shall be limited to a depth not exceeding 3 inches.
- 3.4 Erosion control material shall be anchored, overlapped, and otherwise constructed to ensure performance until vegetation is well established. Anchors shall be as designated on the construction drawings, with a minimum of 12 inches length, and shall be spaced as designated on the construction drawings, with a maximum spacing of 4 feet.
- 3.5 Soil Filling: If noted on the construction drawings, the erosion control mat shall be filled with a fine grained topsoil, as recommended by the manufacturer. Soil shall be lightly raked or brushed on/into the mat to fill the mat voids or to a maximum depth of 1 inch.

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PART V - GEOSYNTHETIC DRAINAGE COMPOSITE

1. DESCRIPTION:

Work shall consist of furnishing and placing a geosynthetic drainage system as a subsurface drainage medium for reinforced soil slopes.

2. DRAINAGE COMPOSITE MATERIALS:

- 2.1 The specific drainage composite material and supplier shall be preapproved by ENGEO.
- 2.2 The drain shall be of composite construction consisting of a supporting structure or drainage core material surrounded by a geotextile. The geotextile shall encapsulate the drainage core and prevent random soil intrusion into the drainage structure. The drainage core material shall consist of a three dimensional polymeric material with a structure that permits flow along the core laterally. The core structure shall also be constructed to permit flow regardless of the water inlet surface. The drainage core shall provide support to the geotextile. The fabric shall meet the minimum property requirements for filter fabric listed in Section 2.05C of the Guide Earthwork Specifications.
- 2.3 A geotextile flap shall be provided along all drainage core edges. This flap shall be of sufficient width for sealing the geotextile to the adjacent drainage structure edge to prevent soil intrusion into the structure during and after installation. The geotextile shall cover the full length of the core.
- 2.4 The geocomposite core shall be furnished with an approved method of constructing and connecting with outlet pipes or weepholes as shown on the plans. Any fittings shall allow entry of water from the core but prevent intrusion of backfill material into the core material.
- 2.5 Certification and Acceptance: The Contractor shall submit a manufacturer's certification that the geosynthetic drainage composite meets the design properties and respective index criteria measured in full accordance with all test methods and standards specified. The manufacturer's certification shall include a submittal package of documented test results that confirm the design values. In case of dispute over validity of design values, the Contractor will supply design property test data from an ENGEO-approved laboratory, to support the certified values submitted. Minimum average roll values, per ASTM D 4759, shall be used for determining conformance.

3. CONSTRUCTION:

- 3.1 Delivery, Storage, and Handling: Contractor shall check the geosynthetic drainage composite upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the geosynthetic drainage composite shall be protected from temperatures greater than 140 °F, mud, dirt, and debris. Manufacturer's recommendations in regards to protection from direct sunlight must also be followed. At the time of installation, the geosynthetic drainage composite shall be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be removed or repaired. Any geosynthetic drainage composite damaged during storage or installation shall be replaced by the Contractor at no additional cost to the Owner.
- 3.2 On-Site Representative: Geosynthetic drainage composite material suppliers shall provide a qualified and experienced representative on site, for a minimum of one half day, to assist the Contractor and ENGEO personnel at the start of construction with directions on the use of drainage composite. If there is more than one application on a project, this criterion will apply to construction of the initial application only. The representative shall also be available on an as-needed basis, as requested by ENGEO, during construction of the remaining applications.
- 3.3 Placement: The soil surface against which the geosynthetic drainage composite is to be placed shall be free of debris and inordinate irregularities that will prevent intimate contact between the soil surface and the drain.
- 3.4 Seams: Edge seams shall be formed by utilizing the flap of the geotextile extending from the geocomposite's edge and lapping over the top of the fabric of the adjacent course. The fabric flap shall be securely fastened to the adjacent fabric by means of plastic tape or non-water-soluble construction adhesive, as recommended by the supplier. Where vertical splices are necessary at the end of a geocomposite roll or panel, an 8-inch-wide continuous strip of geotextile may be placed, centering over the seam and continuously fastened on both sides with plastic tape or non-water-soluble construction adhesive. As an alternative, rolls of geocomposite drain material may be joined together by turning back the fabric at the roll edges and interlocking the cuspidations approximately 2 inches. For overlapping in this manner, the fabric shall be lapped and tightly taped beyond the seam with tape or adhesive. Interlocking of the core shall always be made with the upstream edge on top in the direction of water flow. To prevent soil intrusion, all exposed edges of the geocomposite drainage core edge must be covered. Alternatively, a 12-inch-wide strip of fabric may be utilized in the same manner, fastening it to the exposed fabric 8 inches in from the edge and folding the remaining flap over the core edge.

3.5 Soil Fill Placement: Structural backfill shall be placed immediately over the geocomposite drain. Care shall be taken during the backfill operation not to damage the geotextile surface of the drain. Care shall also be taken to avoid excessive settlement of the backfill material. The geocomposite drain, once installed, shall not be exposed for more than seven days prior to backfilling.

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INTRODUCTION

Purpose and Scope

The purpose of this preliminary geotechnical report is to provide preliminary recommendations regarding the suitability of the site for development, as well as grading and foundation design criteria for the proposed residential development.

Our scope of services as described in our proposal dated May 17, 2005, included:

- Exploratory drilling of five to eight test borings and excavation of 10 to 16 test pits within the site.
- Sampling and laboratory testing of subsurface materials from the borings.
- Logging and visual observation of the borings and test pits.
- Review of historical aerial photographs.
- Preliminary assessment of geological hazards and development of the 1997 UBC seismic design criteria.
- Preliminary recommendations for mitigation of geotechnical constraints such as landslide hazards and expansive soils as necessary.
- Preliminary grading and foundation type recommendations for the proposed development.
- Reporting our preliminary findings and recommendations.

This preliminary report was prepared for the exclusive use of Centex Homes Corporation and their design team consultants. In the event that any changes are made in the character, design, or layout of the development, the preliminary conclusions and recommendations contained in this report must be reviewed by ENGEO Incorporated to determine whether modifications to the report are

necessary. This document may not be reproduced in whole or in part by any means whatsoever, nor may it be quoted or excerpted without the expressed written consent of ENGEO Incorporated.

Site Location and Description

The site is located east of Deer Valley Road and south of Sand Creek in Antioch, California (Figure 1). The parcel (as shown on Figure 2) is approximately 104 acres and is identified by Assessors Parcel Numbers (APN) 057-042-006 and 057-050-005.

The site sits on a fairly hilly parcel ranging in elevation from approximately 200 feet above mean sea level (msl) to approximately 327 feet above msl. The site is bounded by Deer Valley Road to the east, Sand Creek to the north, and vacant fields to the east and south. Natural slope gradients at the site range from around 2:1 or steeper along the creek to relatively flat in the southeast-trending valley in the southeast portion of the site. Existing vegetation consist of native grasses. The property is currently being used for cattle grazing and is surrounded with fencing. One large oak tree is located on-site near the center of the property.

Proposed Development

Based upon preliminary hand-drawn plans prepared by Carlson, Barbee & Gibson, Inc., it is proposed to develop the property with 150 single-family lots and associated roadways and underground utilities. We anticipate that the structures will be one to two stories in height and of wood-framed construction; therefore, the building loads are expected to be light to moderate. Site grading will involve cuts up to approximately 125 feet and fills up to approximately 20 feet in order to create the building pads and street areas.

GEOLOGY AND SEISMICITY

Site Geology

The geology of the area consists mainly of Quaternary alluvium (Qa; Dibblee, 1980). The hilly portions of the site are composed of Markley Sandstone (Tkm; Dibblee, 1980) which is a tan, arkosic sandstone or minor shale. A small amount of Nortonville Shale (Tkn; Dibblee, 1980), a micaceous clay shale, is present in the southwest portion of the site.

Site Soils

Soils at the property have been classified by the U.S. Department of Agriculture as mainly belonging to the Altamont-Fontana (AcF) complex (USDA, 1977). Smaller portions of the property are additionally classified as Altamont clay (AbE), Capay clay (CaA), Pescadero clay loam (Pb) and Rincon clay loam (RbA) (USDA, 1977). The Altamont-Fontana complex is mapped over most of the site, and is composed of approximately 50 percent clay, 30 percent silty clay loam, with the remainder being comprised of other clay and loam.

Faulting and Seismicity

The site is located in a region that contains numerous active earthquake faults. However, no Holocene active faults are mapped across the site by the California Division of Mines and Geology (CDMG) or United States Geological Survey (USGS) and the site is not located within a State-mandated Earthquake Fault Zone. However, according to published maps by Jennings (1994), Bortugno (1991), and Graymer (1994) the potentially active Antioch-Davis fault crosses through the west-central portion of the project site (Figure 2).

Numerous small earthquakes occur every year in the San Francisco Bay Region, and larger earthquakes have been recorded and can be expected to occur in the future. Figure 4 shows the approximate locations of major faults and significant historic earthquakes recorded within the San Francisco Bay Region. The nearest strike-slip fault zoned as active¹ by the State of California Geological Survey is the Greenville Fault, located about 9.0 kilometers to the southwest (Figure 4). According to attenuation relationships developed by Idriss (1994), the Greenville fault is considered capable of causing a probable² mean horizontal site acceleration of approximately 0.34g for a maximum moment magnitude of 6.7 (Blake, 2000).

The regional seismicity of the Bay Area has recently been evaluated by the Working Group on Northern California Earthquake Probabilities (2003). The Working Group periodically attempts to summarize seismic risk in the Bay Area by presenting probabilities of M 6.7 or greater earthquakes on active Bay Area faults for a 30-year return interval. The most recent summary gives a 62 percent aggregate probability for the entire Bay Area. The Hayward-Rodgers Creek Fault, Calaveras Fault, and Concord/Green Valley Fault are assigned 27 percent, 11 percent and 4 percent probabilities, respectively.

A segment of the Great Valley Fault has been identified within 10 miles of the site. The Great Valley Fault is a blind thrust fault with no known surface expression; the postulated fault location has been based on regional seismic activity and isolated subsurface information.

¹ An active fault is defined by the State Mining and Geology Board as one that has had surface displacement within Holocene time (about the last 10,000 years) (Hart, 1992). A potentially active fault is defined by the State Mining and Geology Board as one that has had surface displacement within Pleistocene time (about the last 2,000,000 years) (Hart, 1992).

² From California Division of Mines and Geology Note 43: "The maximum probable earthquake is the maximum earthquake that is likely to occur during a 100-year interval. It is to be regarded as a probable occurrence, not as an assured event that will occur at a specific time." "The maximum credible earthquake is the maximum earthquake that appears possible under the presently known tectonic framework. It is a rational and believable event that is in accord with all known geologic and seismologic facts. In determining the maximum credible earthquake, little regard is given to its probability of occurrence, except that its likelihood of occurring is great enough to be of concern."

Portions of the Great Valley fault are considered seismically-active thrust faults; however, because this fault does not extend to the ground surface, it is not zoned as active by the State of California. The Great Valley fault is considered capable of causing the highest ground shaking at the site, but the recurrence interval is believed longer than for more distant, strike-slip faults. Recent studies suggest that this boundary fault may have been the cause of the Vacaville-Winters earthquake sequence of April 1892 (Eaton, 1986; Wong and Biggar, 1989; Moores and others, 1991). Further seismic activity can be expected to continue along the western margin of the Central Valley, and as with all projects in the area, the development should be designed to accommodate strong earthquake ground shaking.

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GEOTECHNICAL EXPLORATION

Field Exploration

The field exploration for this study was conducted on June 21, 2005, and consisted of drilling five borings (1-B1 through 1-B5) to depths ranging from about 10 to 30 feet below existing grade, and twelve test pits (1-TP1 through 1-TP12), with approximate locations shown on Figure 2. The borings and test pits were roughly located by pacing from existing features and should be considered accurate only to the degree implied by the method used. All ENGEO exploration locations were grouted on the day of the exploration in accordance with Contra Costa County requirements.

The borings were drilled using a truck-mounted, B-24 drill rig equipped with 4-inch-diameter solid flight augers. An ENGEO engineer logged the borings in the field and collected soil samples using 3-inch O.D. California-type split-spoon samplers fitted with 6-inch-long brass liners. The samplers were driven with a 140-pound safety hammer falling a distance of 30 inches. A rope and cat-head system was used to lift the safety hammer during our exploration. The penetration of the sampler into the native materials was field recorded as the number of blows required to drive the sampler 18 inches in 6-inch increments. The boring logs show the number of blows required for the last one foot of penetration. The field logs were used to develop the report boring logs (Appendix A). The logs depict subsurface conditions within the borings for the date of drilling; however, subsurface conditions may vary with time.

Exploratory Test Pits 1-TP1 through 1-TP12 were excavated using an excavator equipped with a 30-inch-wide bucket. The test pits extended to depths ranging from 6½ to 15 feet below the ground surface (bgs). An ENGEO geologist observed the excavation of the test pits and logged the soil conditions encountered. The logs depict subsurface conditions within the test pits at the time the exploration was conducted. Subsurface conditions at other locations may differ from conditions

noted at these locations. The passage of time may result in altered subsurface conditions. In addition, stratification lines represent the approximate boundaries between soil types and the transitions may be gradual.

Laboratory Testing

Representative samples of on-site soils were selected for laboratory testing to determine the following soil characteristics:

Soil Characteristic	Test Method	Report Location
Natural Unit Weight and Moisture Content	ASTM D-2216	Boring Logs, Appendix A
Plasticity Index	ASTM D-4318	Appendix C
Unconfined Compression	ASTM D-2166	Appendix C

The laboratory test results are shown on the boring logs in Appendix A and individual test results are presented in Appendix C.

Subsurface Stratigraphy

In general, the subsurface conditions encountered in our borings consist of silty clays in the upper 10 to 20 feet, and generally reached claystone or siltstone bedrock at a depth of approximately 20 to 25 feet. Detailed boring logs can be found in Appendix A. Subsurface conditions encountered in the test pits indicated that there is four to five feet of colluvium covering portions of the site, but as deep as nine feet in 1-TP4 and as shallow as 1 foot in 1-TP8 through 1-TP10. The rock units encountered on-site consisted of the Markley Sandstone and the Nortonville Shale. These units were encountered at various depths ranging from 1 to 9 feet below the ground surface. Detailed test pit logs can be found in Appendix B.

Laboratory analysis of near-surface silty soil and claystone bedrock indicates that the Plasticity Indices (PI) range from 36 through 50. This suggests that the native bedrock and soils tested are highly plastic and have a high expansion potential.

Groundwater

Groundwater was only encountered in Boring I-B5 at a depth of approximately 13 feet bgs (187 ft msl) during drilling. Groundwater was not encountered in any of the test pits. It should be noted that the borings may not have been left open for a sufficient period of time to establish equilibrium groundwater conditions. In addition, fluctuations in groundwater levels may occur seasonally and over a period of years because of precipitation, changes in drainage patterns, irrigation and other factors. Future irrigation may cause an overall rise in groundwater levels.

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APPENDIX C

PHASE I ENVIRONMENTAL SITE ASSESSMENT

**PHASE ONE
ENVIRONMENTAL SITE ASSESSMENT**

SULLENGER RANCH

ANTIOCH, CALIFORNIA

SUBMITTED

TO

CENTEX HOMES CORPORATION

SAN RAMON, CALIFORNIA

PREPARED

BY

ENGEO INCORPORATED

PROJECT NO. 6826.1.002.01

JUNE 29, 2005

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THE EXPRESS WRITTEN CONSENT OF ENGEO INCORPORATED.**

Project No.
6826.1.002.01

June 29, 2005

Mr. John Buller
Centex Homes Corporation
2527 Camino Ramon, Suite 100
San Ramon, California 94583

Subject: Sullenger Ranch
Antioch, CA

PHASE ONE ENVIRONMENTAL SITE ASSESSMENT

Dear Mr. Buller:

ENGEO Incorporated is pleased to present our Phase One Environmental Site Assessment of the Sullenger Ranch Property located in Antioch, California. The attached report includes a description of the site assessment activities, along with ENGEO's findings regarding the Property.

We are pleased to be of service to you on this project. If you have any questions concerning the contents of our report, please contact us.

Very truly yours,

ENGEO INCORPORATED

Reviewed by:

Kelsey Adams
ka/bf/cc:esa1

Brian Flaherty

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 Historical Topographic Map Report and Aerial Photograph Report
- APPENDIX B** – Preliminary Title Report
- APPENDIX C** – Environmental Site Assessment Questionnaire

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1.0 INTRODUCTION

The subject property (Property) is located east of Deer Valley Road and south of Sand Creek in Antioch, California (Figure 1). The approximately 104-acre Property is identified as Assessor's Parcel Numbers (APN) 057-042-006 and 057-050-005 (Figure 2) and is currently occupied by vacant fields and cattle-grazing lands.

1.1 Executive Summary of Conclusions

The conclusions presented at the end of this report found no Recognized Environmental Conditions (RECs) identified within the Property. One other item of information regarding features that may require general cleanup or demolition in preparation of a changed land use is identified within the Property. We have provided a recommended action item that should be included in the future work to address the feature described in the Other Information section this report. The following sections are presented to assist the reader in evaluating our findings and recommendations.

ENGEO Incorporated has performed a Phase One Environmental Site Assessment for the Property in general conformance with the scope and limitations of ASTM 1527-00.

1.1.1 Recognized Environmental Conditions

We found no RECs connected with past use of the Property.

1.1.2 Other Information

We reviewed regulatory databases and made visual observations during our site visit. Based on these data we present information on features that were either contained in the databases

or observed on the Property. These features were not considered to be RECs. We briefly discuss each feature to allow for a summary of conditions within and neighboring the Property.

1. Two petroleum pipelines, owned by Conoco Phillips and Chevron, run through the southwest corner of the Property and are visible as they cross Sand Creek. Although these pipelines show no visible signs of leakage, they should be considered an REC since they have the potential of impairing surrounding soils. ENGEO Incorporated recommends that a pipeline study, including sampling and laboratory testing be conducted should further development proceed on the Property.

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2.0 PURPOSE AND SCOPE

2.1 Purpose of Phase One Environmental Site Assessment

The purpose of this Phase One Environmental Site Assessment is to identify recognized environmental conditions associated with the Property. As defined in the American Society for Testing and Materials (ASTM) Standard Practice E 1527-00, a Recognized Environmental Condition (REC) is “the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property”.

2.2 Detailed Scope of Services

The scope of services performed included the following:

- A review of publicly available and practically reviewable standard local, state and federal environmental record sources.
- A review of publicly available and practically reviewable standard historical sources, aerial photographs, fire insurance maps and physical setting sources.
- A reconnaissance of the Property to review site use and current conditions. The reconnaissance was conducted to check for the storage, use, production or disposal of hazardous or potentially hazardous materials.
- An interview with the current Property owner.
- Preparation of this report with our findings and conclusions.

2.3 Limitations and Exceptions of Assessment

The professional staff at ENGEO Incorporated strives to perform its services in a proper and professional manner with reasonable care and competence but is not infallible. The recommendations and conclusions presented in this report were based on the findings of our study, which were developed solely from the contracted services. The findings of the report are based in part on contracted database research, out-of-house reports and personal communications. ENGEO Incorporated assumes no liability for the validity of the materials relied upon in the preparation of this report.

This document must not be subject to unauthorized reuse; that is, reuse without written authorization of ENGEO Incorporated. Such authorization is essential because it requires ENGEO to evaluate the document's applicability given new circumstances, not the least of which is passage of time. The findings from a phase one environmental site assessment are typically valid for 180 days after completion of the report, particularly with regard to the regulatory database files. In some instances the shelf life of the report can be less.

This Phase One Environmental Site Assessment is not intended to represent a complete soil or groundwater characterization. This assessment does not define the depth or extent of soil or groundwater contamination. It is intended to provide an evaluation of potential environmental concerns associated with the use of the Property. A more extensive assessment that would include a subsurface exploration with laboratory testing of soil and groundwater samples could provide more definitive information concerning site-specific conditions. If additional assessment activities are considered for the Property and if other entities are retained to provide such services, ENGEO cannot be held responsible for any and all claims arising from or resulting from the performance of such services by other persons or entities, and from any and all claims arising or resulting from clarifications, adjustments, modifications, discrepancies or other changes necessary to reflect changed field or other conditions.

2.4 Special Terms and Conditions

ENGEO Incorporated has prepared this report for the exclusive use of our client, Centex Homes Corporation. It is recognized and agreed that ENGEO has assumed responsibility only for undertaking the study for the client. The responsibility for disclosures or reports to a third party and for remedial or mitigative action shall be solely that of the Client.

Laboratory testing of soil or groundwater samples was not within the scope of the contracted services. The assessment did not include an asbestos survey, an evaluation of lead-based paint, an inspection of light ballasts for PCBs, or a mold survey.

This report is based upon field and other conditions discovered at the time of preparation of ENGEO's work. Visual observations referenced in this report are intended only to represent conditions at the time of the reconnaissance. ENGEO would not be aware of site contamination, such as dumping and/or accidental spillage that occurred subsequent to the reconnaissance conducted by ENGEO personnel.

3.0 SITE DESCRIPTION

3.1 Location and Legal Description

The Property is located east of Deer Valley Road and south of Sand Creek in Antioch, California (Figure 1). The approximately 104-acre Property is identified as Assessor's Parcel Numbers (APN) 057-042-006 and 057-050-005 (Figure 2).

3.2 Site and Vicinity Characteristics

The Property ranges in elevation from approximately 200 feet above mean sea level (msl) in the west to approximately 327 feet above msl to the east (Figure 2). Review of the Thomas W. Dibblee (1980) geologic map found that the Property is underlain by the Quaternary alluvium (Qa) and Markley Sandstone member (Tkm), a tan arkosic sandstone or minor shale.

We reviewed the State of California, Department of Water Resources web site for ground water level data in the vicinity of the Property. Well number 01N03E17E001M mapped approximately 5.5-miles east of the Property shows that groundwater in the vicinity of the Property is between an elevation of 38 and 48 feet msl. This data reflects the elevation of the usable aquifer above msl and does not preclude the presence of shallower aquifers.

3.3 Current Use of Property/Description of Site Improvements

The Property is currently being used as cattle-grazing land. No site improvements are present on the Property.

3.4 Current and Past Use of Adjoining Properties

Current and past use of adjoining properties includes agricultural use with some residential use to the east.

4.0 RECORDS REVIEW

4.1 Historical Record Sources

The purpose of the historical record review is to develop a history of the previous uses or occupancies of the Property and surrounding area in order to identify those uses or occupancies that are likely to have led to recognized environmental conditions on the Property.

4.1.1 Historical Topographic Maps

Historical USGS 7.5' Topographic Maps were reviewed to determine if discernible changes in topography or improvements pertaining to the Property had been recorded. USGS 7.5' Antioch South Quadrangle Maps dated 1912, 1916, 1947, 1953, 1968, 1973 and 1980 were reviewed.

1912, 1916 and 1947 maps – The 1912, 1916 and 1947 topographical maps show the Property as a hilly, undeveloped area. Two hills are mapped on the Property. An unnamed road, now Deer Valley Road, is shown just to the west of the Property. A creek runs through the Property. The Southern Pacific railroad line is in place north of the Property.

1953, 1968, 1973 and 1980 maps – The 1953, 1968, 1973 and 1980 topographical maps show no major change to the topography of the Property. The two hills are shown at elevations of 327 and 328 feet above mean sea level (msl). Deer Valley Road and Sand Creek were named prior to 1953.

4.1.2 Chain of Title/Ownership

The Title Report lists recorded land title detail, ownership fees, leases, land contracts, easements, liens, deficiencies, and other encumbrances attached to or recorded against a subject property. However, laws and regulations pertaining to land trusts vary from state to state and the detail of information presented in a Title Report can vary greatly by jurisdiction. As a result, ENGEO utilizes a Title Report, when provided to us, as a supplement to other historical record sources.

The preliminary title report prepared by Alliance Title on May 23, 2005, identifies Monte Albers and Lucia Albers, co-trustees of the Monte Albers and Lucia Albers Trust, dated June 4, 1985, as to an undivided 20% interest; Hillside Group LLC, a California limited liability company as to an undivided 30% interest; and John T. Camara and Margaret Camara, his wife, as joint tenants, as to an undivided 50% interest for APN 057-042-006 and 057-050-005. A copy of the Preliminary Title Report can be found in Appendix B of this report.

4.1.3 Fire Insurance Maps

Environmental Data Resources, Inc. (EDR) prepared a Sanborn Fire insurance map search for the Property and surrounding properties. EDR reported that no maps were available for the Property and surrounding properties.

4.1.4 Other Government Contacts/Building and Planning

The City of Antioch was contacted to view any files for building permits or other structures that may have been erected on the Property. The City of Antioch Building Department had no files for the Property.

The Contra Costa County Department of Environmental Health was contacted to view any files for the Property. No files were reported for the Property.

4.1.5 Aerial Photographs

The following aerial photographs were reviewed for information regarding past conditions and land use at the Property and in the immediate vicinity.

PHOTO NUMBER	SOURCE	SCALE	DATE
1	EDR	1 in = 55 ft	1939
2	EDR	1 in = 55 ft	1958
3	EDR	1 in = 333 ft	1965
4	EDR	1 in = 690 ft	1982
5	EDR	1 in = 666 ft	1993
6	EDR	1 in = 666 ft	1998

1939 Photograph – The 1939 photograph shows the Property as undeveloped land. A creek flows through the Property running approximately east to west. Surrounding parcels are undeveloped. Some structures are present on the property directly north of the Property.

1958, 1965, 1982, and 1993 Photographs – The 1958, 1965, 1982 and 1993 photographs are very similar to the 1939 photograph. Some residences have been constructed to the east of the Property prior to 1958.

1998 Photograph – The 1998 photograph is very similar to previous photographs. No development appears on site, except for a dirt road that extends from the northwest corner to the northeast corner of the Property.

4.2 Environmental Record Sources

Environmental Data Resources Inc. (EDR) performed a search of local, state, and federal agency databases regarding the subject parcels and known contaminated sites in the immediate vicinity. A list of databases searched and their corresponding search radii is presented in Appendix A. A summary of facilities documented by EDR within the specified search radii from the Property is provided below:

4.2.1 Federal ASTM Standard/Supplemental Sources

4.2.1.1 Subject Property

The Property is not listed on the Federal ASTM Standard or Supplemental sources.

4.2.1.2 Other Properties

No properties within appropriate ASTM distance search criteria were identified on the Federal ASTM Standard or Supplemental sources.

4.2.2 State ASTM Standard/Supplemental Sources

4.2.2.1 Subject Property

The Property is not listed on the State ASTM Standard or Supplemental sources.

4.2.2.2 Other Properties

No properties within appropriate ASTM distance search criteria were identified on the State ASTM Standard or Supplemental sources.

4.2.3 Local ASTM Supplemental Sources

4.2.3.1 Subject Property

The Property is not listed on Local ASTM Supplemental databases.

4.2.3.2 Other Properties

No properties within appropriate ASTM distance search criteria were identified on Local ASTM Supplemental sources.

Properties that are on the “Orphan Summary” list were either not located or appear to be located beyond the ASTM recommended radius search criteria.

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5.0 SITE RECONNAISSANCE

5.1 Methodology

ENGEO conducted a reconnaissance of the Property on June 21, 2005. The Property was viewed for hazardous materials storage, superficial staining or discoloration, debris, stressed vegetation, or other conditions that may be indicative of potential sources of soil or groundwater contamination. The site was also reviewed for evidence of fill/ventilation pipes, ground subsidence, or other evidence of existing or preexisting underground storage tanks.

5.2 General Site Setting

The site is currently being used as cattle-grazing land. Sand Creek runs through the Property and was dry at the time of the reconnaissance. Two petroleum pipelines run across the southwest corner of Property, and are visible as they cross Sand Creek. Two dirt roads provide access across the Property.

5.3 Exterior Observations

Structures

No structures were on the Property at the time of the reconnaissance.

Hazardous Substances and Petroleum Products in Connection with Identified Uses

No hazardous substances or petroleum products in connection with identified uses were noted on the Property during the reconnaissance.

Storage Tanks

No storage tanks were noted on the Property during the reconnaissance.

Odors

No odors were encountered on the Property during the reconnaissance.

Pools of Potentially Hazardous Liquid

No pools of potentially hazardous liquids were noted on the Property during the reconnaissance.

Drums

No drums were present on the Property during the reconnaissance.

Hazardous Substance and Petroleum Product Containers

No hazardous substances or petroleum product containers were noted on the Property during the reconnaissance.

Polychlorinated Biphenyls (PCBs)

No sources of PCBs were noted on the Property during the reconnaissance.

Pits, Ponds and Lagoons

No pits, ponds or lagoons were noted on the Property during the reconnaissance.

Stained Soil/Pavement

No stained soil or pavement was noted on the Property during the reconnaissance.

Stressed Vegetation

No stressed vegetation was noted on the Property during the reconnaissance.

Solid Waste

No solid waste was present on the Property during the reconnaissance.

Wastewater

No conveyance of wastewater was noted on the Property during the reconnaissance.

Wells

No wells were noted on the Property during the reconnaissance.

Septic Systems

No septic systems were noted on the Property during the reconnaissance.

5.4 Asbestos-Containing Materials (ACM) and Lead-Based Paint

An asbestos and lead-based paint survey was not conducted as part of this assessment. No structures are currently located with the Property.

5.5 Indoor Air Quality

An evaluation of indoor air quality, mold, or radon was not included as part of the contracted scope of services. The USEPA and CAL - EPA have conducted studies of radon risks throughout the state. Results of the studies indicate that average statistical radon concentrations in Contra Costa County are less than the current EPA action level.

6.0 INTERVIEWS

During the site reconnaissance, an ENGEO staff engineer interviewed Mr. Walt Bartlett, who leases the Property as cattle grazing land. He indicated that the Property has been used as cattle grazing land for several years. No environmental concerns were mentioned during the interview.

An Environmental Site Assessment Questionnaire was completed by the Client. The questionnaire did not indicate any environmental concerns related to the Property. A copy of the questionnaire is presented in Appendix C of the report.

7.0 CONCLUSIONS

The reconnaissance and records research did not find documentation or physical evidence of soil or groundwater impairments associated with the use of the Property. A review of regulatory databases maintained by county, state and federal agencies found no documentation of hazardous materials violations or discharge on the Property. No documented soil or groundwater contamination associated with abutting properties was found from the records research.

ENGEO Incorporated has performed a Phase One Environmental Site Assessment in general conformance with the scope and limitations of ASTM 1527-00. Based on the findings of the assessment, there are no Recognized Environmental Conditions (RECs) within the Property.

7.1 Other Information

1. Two petroleum pipelines, owned by Conoco Phillips and Chevron, run through the southwest corner of the Property and are visible as they cross Sand Creek. Although these pipelines show no visible signs of leakage, they should be considered an REC since they have the potential of impairing surrounding soils. ENGEO Incorporated recommends that a pipeline study, including sampling and laboratory testing, be conducted should further development proceed on the Property.

SELECTED REFERENCES

Geologic – Antioch-South Quadrangle. Dibblee, 1980

USGS 7.5' Antioch-South Quadrangle-Contra Costa County Maps dated 1912, 1916, 1947, 1953, 1968, 1973 and 1980.

EPA Assessment of Risks from Radon in Homes, United State Environmental Protection Agency, Office of Radiation and Indoor Air, June 2003

<http://wdl.water.ca.gov>

<http://www.terraserver.microsoft.com>

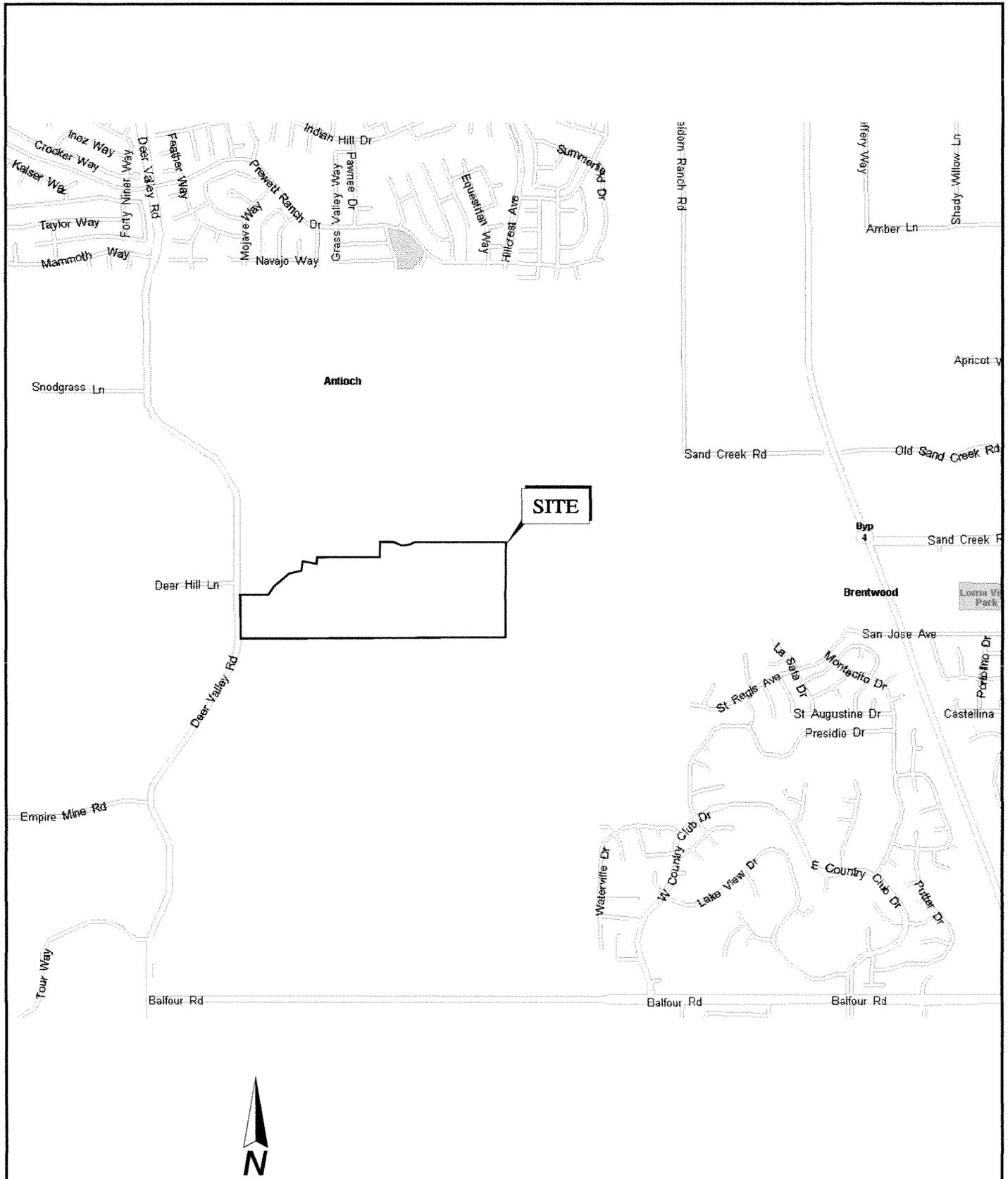
DRAFT

LIST OF FIGURES

Figure 1	Site Vicinity Map
Figure 2	Topographic Map
Figure 3	Aerial Photo

DRAFT

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BASE MAP SOURCE: MS STREETS AND TRIPS

NO SCALE



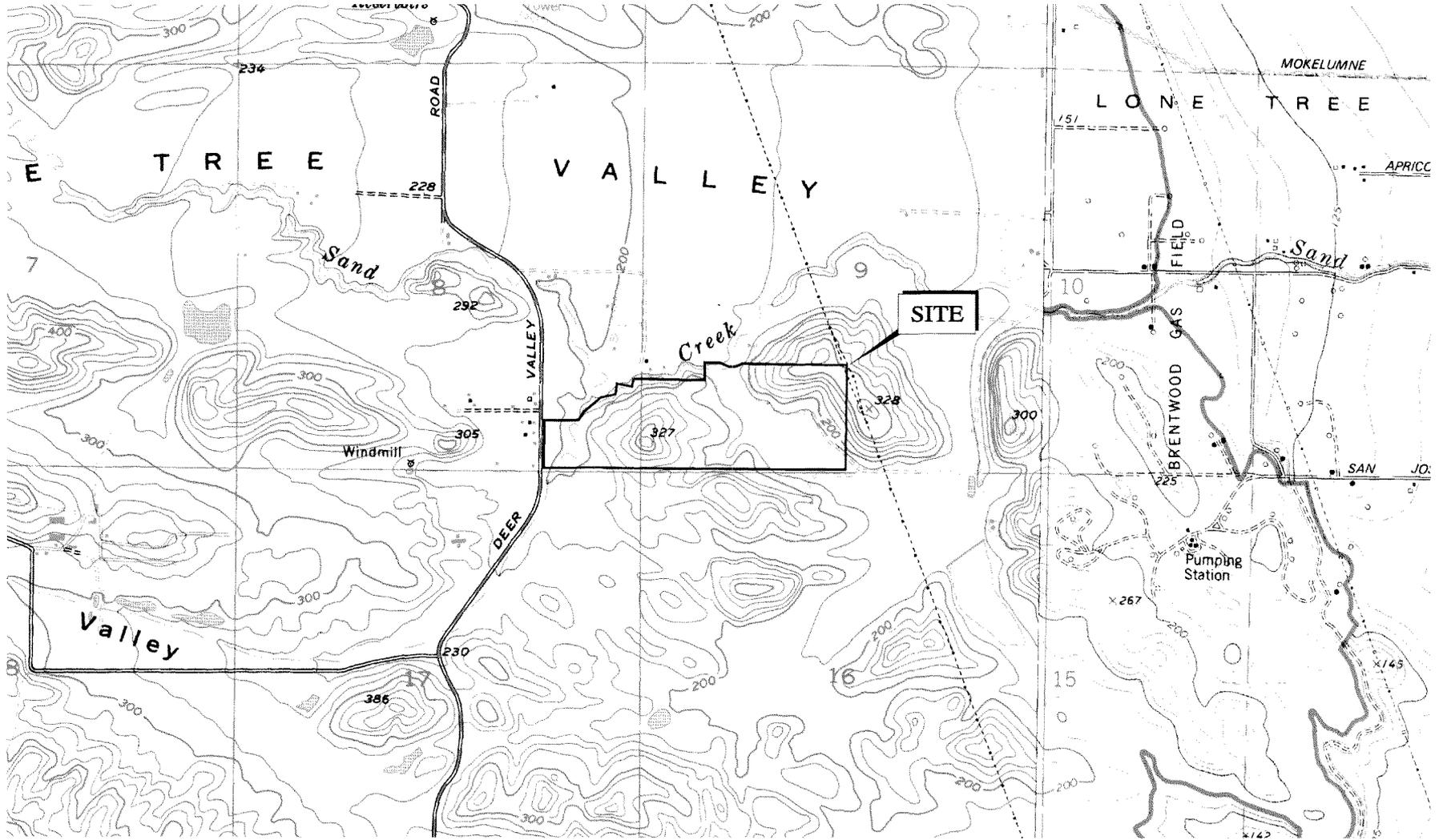
SITE VICINITY MAP
SULLENGER RANCH
ANTIOCH, CALIFORNIA

PROJECT NO.: 6826.1.002.01	FIGURE NO.
DATE: JULY 2005	1
DRAWN BY: PC	

ORIGINAL FIGURE PRINTED IN COLOR

ORIGINAL FIGURE PRINTED IN COLOR

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BASE MAP SOURCE: USGS



TOPOGRAPHIC MAP
SULLENGER RANCH
ANTIOCH, CALIFORNIA

PROJECT NO.: 6826.1.002.01

DATE: JULY 2005

DRAWN BY: PC

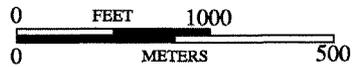
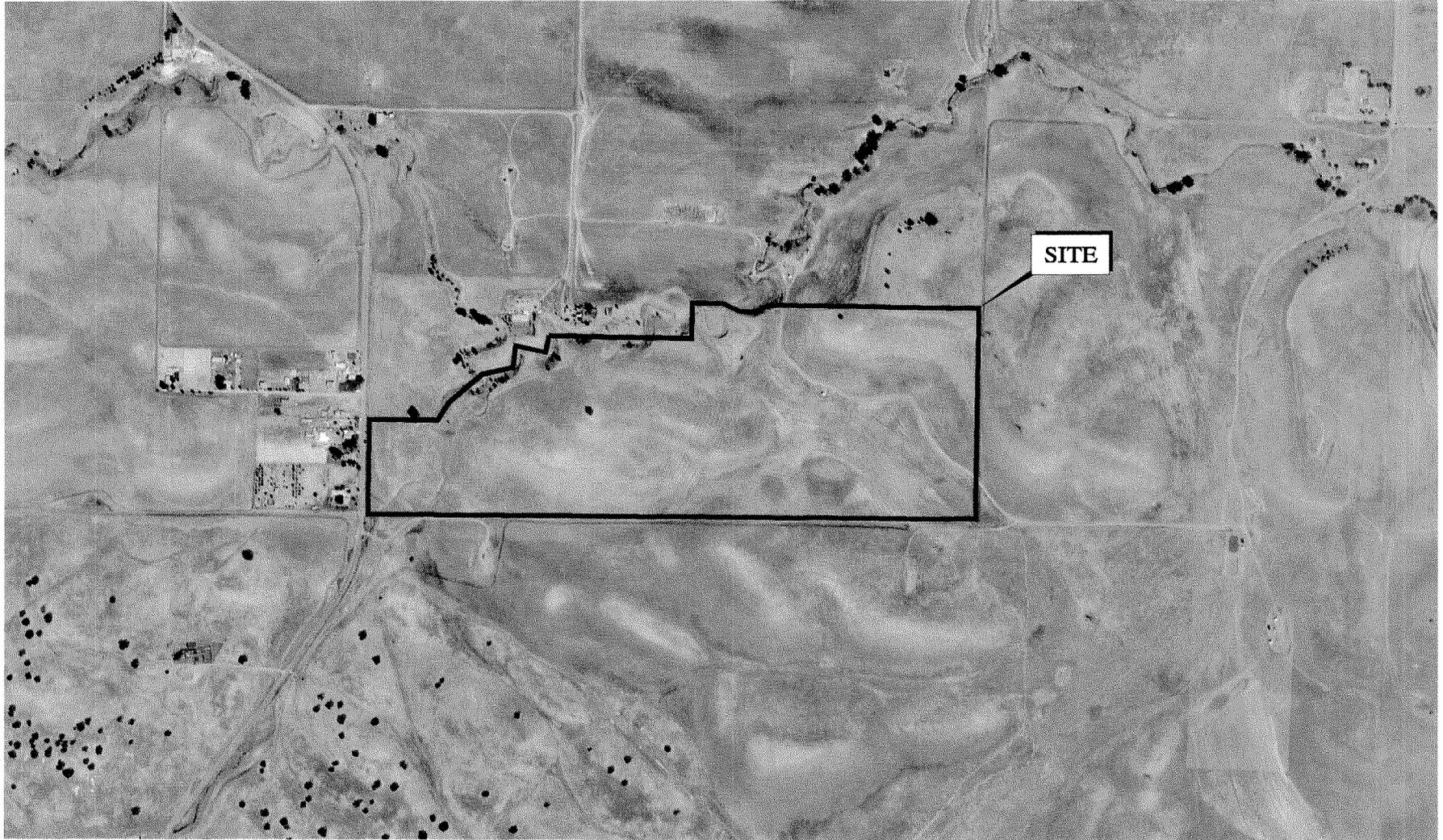
CHECKED BY: JT

FIGURE NO.

2

ORIGINAL FIGURE PRINTED IN COLOR

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BASE MAP SOURCE: USGS



AERIAL PHOTOGRAPH
SULLENGER RANCH
ANTIOCH, CALIFORNIA

PROJECT NO:	6826.1.002.01
DATE:	JULY 2005
DRAWN BY:	PC
CHECKED BY:	JT

FIGURE NO.

3

APPENDIX A

ENVIRONMENTAL DATA RESOURCES, INC.

Sanborn Map Report
Radius Map Report
Historical Topographic Map Report
Aerial Photograph Report

DRAFT



EDR™ Environmental
Data Resources Inc

"Linking Technology with Tradition"®

Sanborn® Map Report

Ship To: Kelsey Adams

Engeo Inc.

2010 Crow Canyon Place

San Ramon, CA 94583

Order Date: 6/27/2005 **Completion Date:** 6/27/2005

Inquiry #: 1454086.3

P.O. #: NA

Site Name: Sullenger Ranch

Address: Deer Valley Rd

City/State: Antioch, CA 94513

Cross Streets:

Customer Project: 6826.1.001.01

1018035WIL 925-866-9000

This document reports that the largest and most complete collection of Sanborn fire insurance maps has been reviewed based on client supplied information, and fire insurance maps depicting the target property at the specified address were not identified.

NO COVERAGE

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT. Purchaser accepts this Report AS IS. Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

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EDR™ Environmental
Data Resources Inc

The EDR Radius Map with GeoCheck®

**Sullenger Ranch
Deer Valley Rd
Antioch, CA 94531**

Inquiry Number: 01454086.2r

June 27, 2005

The Standard in Environmental Risk Management Information

440 Wheelers Farms Road
Milford, Connecticut 06460

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

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Thank you for your business.
 Please contact EDR at 1-800-352-0050
 with any questions or comments.

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This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The report meets the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-00. Search distances are per ASTM standard or custom distances requested by the user.

TARGET PROPERTY INFORMATION

ADDRESS

DEER VALLEY RD
ANTIOCH, CA 94531

COORDINATES

Latitude (North): 37.940600 - 37° 56' 26.2"
Longitude (West): 121.769900 - 121° 46' 11.6"
Universal Transverse Mercator: Zone 10
UTM X (Meters): 608091.3
UTM Y (Meters): 4199732.5
Elevation: 269 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property: 37121-H7 ANTIOCH SOUTH, CA
Source: USGS 7.5 min quad index

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the ASTM E 1527-00 search radius around the target property for the following databases:

FEDERAL ASTM STANDARD

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
CERCLIS..... Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP..... CERCLIS No Further Remedial Action Planned
CORRACTS..... Corrective Action Report
RCRA-TSDF..... Resource Conservation and Recovery Act Information
RCRA-LQG..... Resource Conservation and Recovery Act Information
RCRA-SQG..... Resource Conservation and Recovery Act Information
ERNS..... Emergency Response Notification System

STATE ASTM STANDARD

AWP..... Annual Workplan Sites

EXECUTIVE SUMMARY

Cal-Sites	Calsites Database
CHMIRS	California Hazardous Material Incident Report System
Cortese	"Cortese" Hazardous Waste & Substances Sites List
Notify 65	Proposition 65 Records
Toxic Pits	Toxic Pits Cleanup Act Sites
SWF/LF	Solid Waste Information System
WMUDS/SWAT	Waste Management Unit Database
LUST	Geotracker's Leaking Underground Fuel Tank Report
CA BOND EXP. PLAN	Bond Expenditure Plan
UST	List of Underground Storage Tank Facilities
VCP	Voluntary Cleanup Program Properties
INDIAN LUST	Leaking Underground Storage Tanks on Indian Land
INDIAN UST	Underground Storage Tanks on Indian Land
CA FID UST	Facility Inventory Database
HIST UST	Hazardous Substance Storage Container Database

FEDERAL ASTM SUPPLEMENTAL

CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
Delisted NPL	National Priority List Deletions
FINDS	Facility Index System/Facility Identification Initiative Program Summary Report
HMIRS	Hazardous Materials Information Reporting System
MLTS	Material Licensing Tracking System
MINES	Mines Master Index File
NPL Liens	Federal Superfund Liens
PADS	PCB Activity Database System
US ENG CONTROLS	Engineering Controls Sites List
ODI	Open Dump Inventory
DOD	Department of Defense Sites
INDIAN RESERV.	Indian Reservations
UMTRA	Uranium Mill Tailings Sites
FUDS	Formerly Used Defense Sites
RAATS	RCRA Administrative Action Tracking System
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
SSTS	Section 7 Tracking Systems
FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

STATE OR LOCAL ASTM SUPPLEMENTAL

AST	Aboveground Petroleum Storage Tank Facilities
CLEANERS	Cleaner Facilities
CA WDS	Waste Discharge System
DEED	Deed Restriction Listing
NFA	No Further Action Determination
WIP	Well Investigation Program Case List
EMI	Emissions Inventory Data
REF	Unconfirmed Properties Referred to Another Agency
SCH	School Property Evaluation Program
NFE	Properties Needing Further Evaluation
SLIC	Statewide SLIC Cases
HAZNET	Facility and Manifest Data

EXECUTIVE SUMMARY

CONTRA COSTA CO. SITE LIST Site List

EDR PROPRIETARY HISTORICAL DATABASES

Coal Gas..... Former Manufactured Gas (Coal Gas) Sites

BROWNFIELDS DATABASES

US BROWNFIELDS..... A Listing of Brownfields Sites

US INST CONTROL..... Sites with Institutional Controls

VCP..... Voluntary Cleanup Program Properties

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

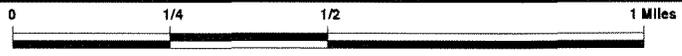
Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
BLUE GOOSE PROPERTIES	LUST, Cortese
SANTA FE PACIFIC PIPELINE PARTNERS	CERC-NFRAP
HOLLAND TRACT - PAPER PULP LANDSPREADING	SWF/LF
EAST CONTRA COSTA CO COLLECTION CNTR	SWF/LF
MANGINI BROS	UST, CONTRA COSTA CO. SITE LIST
LADD, L. JORDAN	UST, CONTRA COSTA CO. SITE LIST
RIPPEE RANCH	HIST UST
MANGINI BROS	HIST UST
PREWETT RANCH	HIST UST
L. ORDAN LADD	HIST UST
SEKO RANCH	HIST UST
NORMAN'S BRENTWOOD NURSERY	CA FID UST, CONTRA COSTA CO. SITE LIST
BILL BRANDT FORD, INC.	CA FID UST, CONTRA COSTA CO. SITE LIST
SAND HILL RANCH	CA FID UST, CONTRA COSTA CO. SITE LIST
SEKO RANCH	CA FID UST, CONTRA COSTA CO. SITE LIST
CHEAPER! #151	CA FID UST, CONTRA COSTA CO. SITE LIST
RODDY RANCH	HAZNET, CONTRA COSTA CO. SITE LIST
BETTENCOURT, EVELYN T	CONTRA COSTA CO. SITE LIST
HARDIN, CHARLES W	CONTRA COSTA CO. SITE LIST
BRANSCUM, LUTHER W	CONTRA COSTA CO. SITE LIST
SOITE, CATARINA	CONTRA COSTA CO. SITE LIST
KARAGLANIS, FRANK P	CONTRA COSTA CO. SITE LIST
A L CHRISTENSEN & SON	CONTRA COSTA CO. SITE LIST
RIPPEE RANCH	CONTRA COSTA CO. SITE LIST
MAGGIORA, MELVIN	CONTRA COSTA CO. SITE LIST
CARLISLE, ROY	CONTRA COSTA CO. SITE LIST
CLEMONS, EARL	CONTRA COSTA CO. SITE LIST
CAL TRANS HIGHWAY WIDENING	CONTRA COSTA CO. SITE LIST
MARSH CREEK #2 DEHYDRATION STATION	CONTRA COSTA CO. SITE LIST
NICHOLSON COMPANY	CONTRA COSTA CO. SITE LIST

OVERVIEW MAP - 01454086.2r - Engeo Inc.

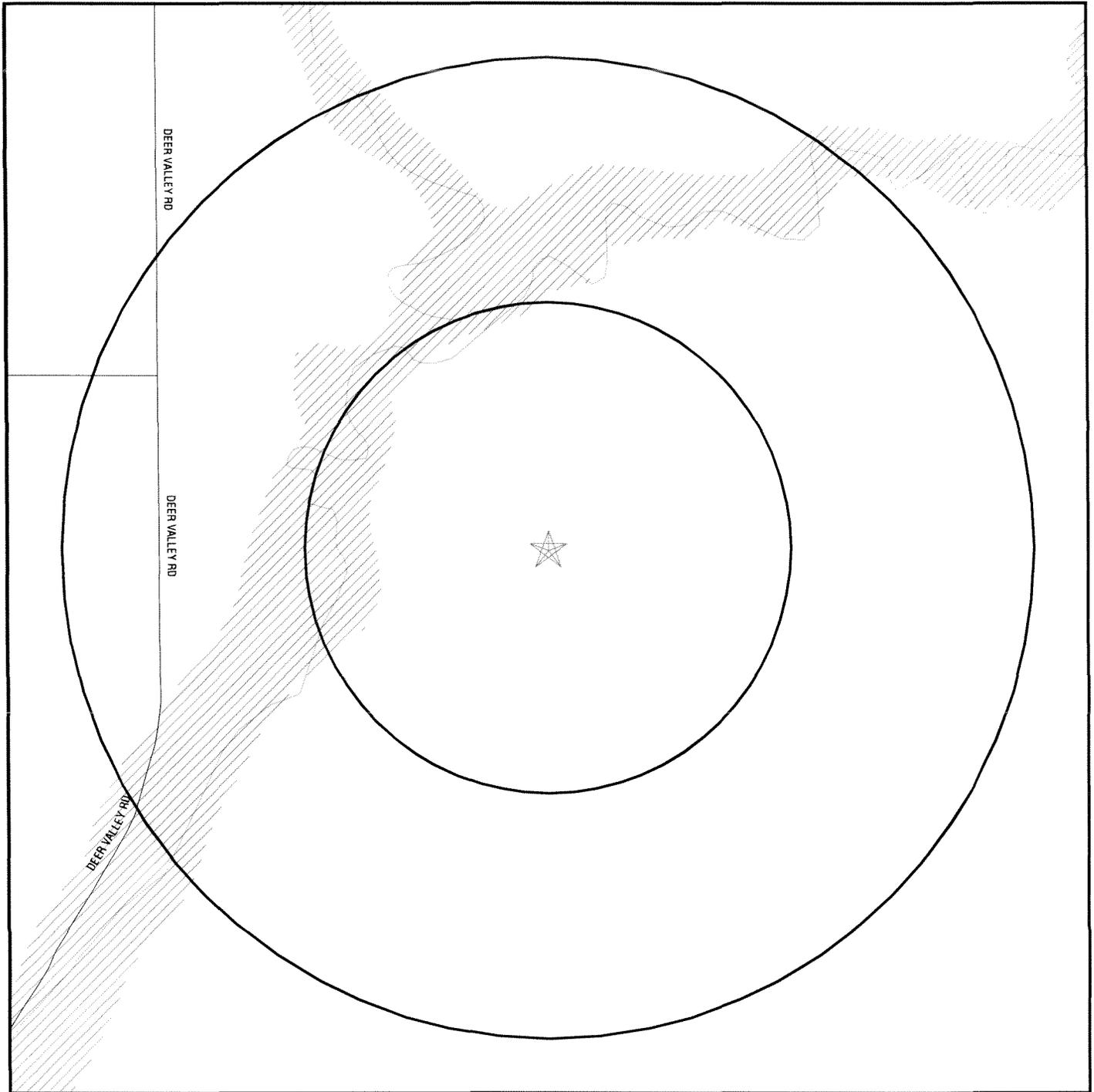


- ★ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- ▲ Coal Gasification Sites
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- ~ Power transmission lines
- ~ Oil & Gas pipelines
- ▨ 100-year flood zone
- ▨ 500-year flood zone
- Federal Wetlands
- Areas of Concern

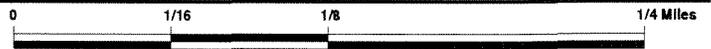


TARGET PROPERTY:	Sullenger Ranch	CUSTOMER:	Engeo Inc.
ADDRESS:	Deer Valley Rd	CONTACT:	Kelsey Adams
CITY/STATE/ZIP:	Antioch CA 94531	INQUIRY #:	01454086.2r
LAT/LONG:	37.9406 / 121.7699	DATE:	June 27, 2005 2:16 pm

DETAIL MAP - 01454086.2r - Engeo Inc.



- ★ Target Property
 - ▲ Sites at elevations higher than or equal to the target property
 - ◆ Sites at elevations lower than the target property
 - ▲ Coal Gasification Sites
 - ▣ Sensitive Receptors
 - ▣ National Priority List Sites
 - ▣ Landfill Sites
 - ▣ Dept. Defense Sites
- ▣ Indian Reservations BIA
 - ~ Oil & Gas pipelines
 - ▨ 100-year flood zone
 - ▩ 500-year flood zone
 - ▣ Areas of Concern



TARGET PROPERTY: Sullenger Ranch ADDRESS: Deer Valley Rd CITY/STATE/ZIP: Antioch CA 94531 LAT/LONG: 37.9406 / 121.7699	CUSTOMER: Engeo Inc. CONTACT: Kelsey Adams INQUIRY #: 01454086.2r DATE: June 27, 2005 2:17 pm
---	--

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
<u>FEDERAL ASTM STANDARD</u>								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.250	0	0	NR	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
RCRA TSD		0.500	0	0	0	NR	NR	0
RCRA Lg. Quan. Gen.		0.250	0	0	NR	NR	NR	0
RCRA Sm. Quan. Gen.		0.250	0	0	NR	NR	NR	0
ERNS		TP	NR	NR	NR	NR	NR	0
<u>STATE ASTM STANDARD</u>								
AWP		1.000	0	0	0	0	NR	0
Cal-Sites		1.000	0	0	0	0	NR	0
CHMIRS		TP	NR	NR	NR	NR	NR	0
Cortese		0.500	0	0	0	NR	NR	0
Notify 65		1.000	0	0	0	0	NR	0
Toxic Pits		1.000	0	0	0	0	NR	0
State Landfill		0.500	0	0	0	NR	NR	0
WMUDS/SWAT		0.500	0	0	0	NR	NR	0
LUST		0.500	0	0	0	NR	NR	0
CA Bond Exp. Plan		1.000	0	0	0	0	NR	0
UST		0.250	0	0	NR	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0
INDIAN LUST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
CA FID UST		0.250	0	0	NR	NR	NR	0
HIST UST		0.250	0	0	NR	NR	NR	0
<u>FEDERAL ASTM SUPPLEMENTAL</u>								
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
HMIRS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
NPL Liens		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
ODI		0.500	0	0	0	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
INDIAN RESERV		1.000	0	0	0	0	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
FUDS		1.000	0	0	0	0	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
<u>STATE OR LOCAL ASTM SUPPLEMENTAL</u>								
AST		TP	NR	NR	NR	NR	NR	0
CLEANERS		0.250	0	0	NR	NR	NR	0
CA WDS		TP	NR	NR	NR	NR	NR	0
DEED		0.500	0	0	0	NR	NR	0
NFA		0.250	0	0	NR	NR	NR	0
WIP		0.250	0	0	NR	NR	NR	0
EMI		TP	NR	NR	NR	NR	NR	0
REF		0.250	0	0	NR	NR	NR	0
SCH		0.250	0	0	NR	NR	NR	0
NFE		0.250	0	0	NR	NR	NR	0
SLIC		0.500	0	0	0	NR	NR	0
HAZNET		TP	NR	NR	NR	NR	NR	0
Contra Costa Co. Site List		0.250	0	0	NR	NR	NR	0
<u>EDR PROPRIETARY HISTORICAL DATABASES</u>								
Coal Gas		1.000	0	0	0	0	NR	0
<u>BROWNFIELDS DATABASES</u>								
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0

NOTES:

AQUIFLOW - see EDR Physical Setting Source Addendum

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID
Direction
Distance
Distance (ft.)
Elevation

MAP FINDINGS

Site Database(s) EDR ID Number
EPA ID Number

Coal Gas Site Search: No site was found in a search of Real Property Scan's ENVIROHAZ database.

NO SITES FOUND

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ANTIOCH	S102359868	HOLLAND TRACT - PAPER PULP LANDSPREADING	HOLLAND TRACT, KNIGHTSEN CA 94548		SWF/LF
ANTIOCH	S106528913	EAST CONTRA COSTA CO COLLECTION CNTR	WILBER AVE @ VIERA AVE		SWF/LF
BRENTWOOD	S102260121	BETTENCOURT, EVELYN T	RT 1, BOX 116	94513	CONTRA COSTA CO. SITE LIST
BRENTWOOD	S102260124	HARDIN, CHARLES W	RT 1, BOX 55A	94513	CONTRA COSTA CO. SITE LIST
BRENTWOOD	S102260125	BRANSCUM, LUTHER W	RT 1, BOX 55B	94513	CONTRA COSTA CO. SITE LIST
BRENTWOOD	S102260126	SOITE, CATARINA	RT 1, BOX 7	94513	CONTRA COSTA CO. SITE LIST
BRENTWOOD	S103464216	KARAGLANIS, FRANK P	RT 1, BOX 42	94513	CONTRA COSTA CO. SITE LIST
BRENTWOOD	S106516835	A L CHRISTENSEN & SON	RT 1, BOX 20	94513	CONTRA COSTA CO. SITE LIST
BRENTWOOD	U001596371	RIPPEE RANCH	RR 2 BOX 241	94513	HIST UST
BRENTWOOD	S104161982	RIPPEE RANCH	RT 2, BOX 241	94513	CONTRA COSTA CO. SITE LIST
BRENTWOOD	S102260127	MAGGIORA, MELVIN	RT 2, BOX 197	94513	CONTRA COSTA CO. SITE LIST
BRENTWOOD	S102260129	CARLISLE, ROY	RT 2, BOX 261	94513	CONTRA COSTA CO. SITE LIST
BRENTWOOD	S101580870	NORMAN'S BRENTWOOD NURSERY	RR 3 BOX 526 HWY 4	94513	CA FID UST, CONTRA COSTA CO. SITE LIST
BRENTWOOD	S101580858	CLEMONS, EARL	RT 3, BOX 970	94513	CONTRA COSTA CO. SITE LIST
BRENTWOOD	S101623515	BILL BRANDT FORD, INC.	1245 HIGHWAY 4	94513	CA FID UST, CONTRA COSTA CO. SITE LIST
BRENTWOOD	S102260089	CAL TRANS HIGHWAY WIDENING	HWY 4 / SPRUCE	94513	CONTRA COSTA CO. SITE LIST
BRENTWOOD	S103464211	MARSH CREEK #2 DEHYDRATION STATION	HWY 4 / SUNSET RD	94513	CONTRA COSTA CO. SITE LIST
BRENTWOOD	S105022926	BLUE GOOSE PROPERTIES	380 HWY 4 S	94513	LUST, Cortese
BRENTWOOD	U001596363	MANGINI BROS	HIGHWAY 4	94513	HIST UST
BRENTWOOD	U003784124	MANGINI BROS	HWY 4	94513	UST, CONTRA COSTA CO. SITE LIST
BRENTWOOD	U001596368	PREWETT RANCH	PO BOX 730	94513	HIST UST
BRENTWOOD	U001596356	L. ORDAN LADD	BYRON HIGHWAY AT	94513	HIST UST
BRENTWOOD	U003784169	LADD, L. JORDAN	BYRON HWY	94513	UST, CONTRA COSTA CO. SITE LIST
BRENTWOOD	S101580980	SAND HILL RANCH	CAMINO DIABLO	94513	CA FID UST, CONTRA COSTA CO. SITE LIST
BRENTWOOD	S102260074	RODDY RANCH	CHADBOURNE ROAD	94513	HAZNET, CONTRA COSTA CO. SITE LIST
BRENTWOOD	1003879687	SANTA FE PACIFIC PIPELINE PARTNERS	SE CORNER OF BALFOUR RD & FAIRVIEW AVE.	94513	CERC-NFRAP
BRENTWOOD	U001596379	SEKO RANCH	100 AA EUREKA AVE	94513	HIST UST
BRENTWOOD	S101623531	SEKO RANCH	100 AA EUREKA AVE	94513	CA FID UST, CONTRA COSTA CO. SITE LIST
BRENTWOOD	S101581132	CHEAPER! #151	LONE TREE WAY/HWY 4	94513	CA FID UST, CONTRA COSTA CO. SITE LIST
BRENTWOOD	S102260139	NICHOLSON COMPANY	SPRUCE AVE / HWY 4	94513	CONTRA COSTA CO. SITE LIST

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM STANDARD RECORDS

NPL: National Priority List

Source: EPA

Telephone: N/A

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/28/05

Date Made Active at EDR: 05/16/05

Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 05/04/05

Elapsed ASTM days: 12

Date of Last EDR Contact: 05/04/05

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)

Telephone: 202-564-7333

EPA Region 1

Telephone 617-918-1143

EPA Region 3

Telephone 215-814-5418

EPA Region 4

Telephone 404-562-8033

EPA Region 6

Telephone: 214-655-6659

EPA Region 8

Telephone: 303-312-6774

Proposed NPL: Proposed National Priority List Sites

Source: EPA

Telephone: N/A

Date of Government Version: 04/27/05

Date Made Active at EDR: 05/16/05

Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 05/04/05

Elapsed ASTM days: 12

Date of Last EDR Contact: 05/04/05

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

Source: EPA

Telephone: 703-413-0223

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/15/05

Date Made Active at EDR: 04/06/05

Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 03/22/05

Elapsed ASTM days: 15

Date of Last EDR Contact: 03/22/05

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Source: EPA

Telephone: 703-413-0223

As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/22/05
Date Made Active at EDR: 04/06/05
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 04/01/05
Elapsed ASTM days: 5
Date of Last EDR Contact: 04/01/05

CORRACTS: Corrective Action Report

Source: EPA

Telephone: 800-424-9346

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/29/05
Date Made Active at EDR: 05/16/05
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 04/11/05
Elapsed ASTM days: 35
Date of Last EDR Contact: 03/07/05

RCRA: Resource Conservation and Recovery Act Information

Source: EPA

Telephone: 800-424-9346

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS).

The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 05/20/05
Date Made Active at EDR: 06/09/05
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 05/24/05
Elapsed ASTM days: 16
Date of Last EDR Contact: 05/24/05

ERNS: Emergency Response Notification System

Source: National Response Center, United States Coast Guard

Telephone: 202-260-2342

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/04
Date Made Active at EDR: 03/24/05
Database Release Frequency: Annually

Date of Data Arrival at EDR: 01/27/05
Elapsed ASTM days: 56
Date of Last EDR Contact: 04/25/05

FEDERAL ASTM SUPPLEMENTAL RECORDS

BRS: Biennial Reporting System

Source: EPA/NTIS

Telephone: 800-424-9346

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/01/01
Database Release Frequency: Biennially

Date of Last EDR Contact: 04/15/05
Date of Next Scheduled EDR Contact: 06/13/05

CONSENT: Superfund (CERCLA) Consent Decrees

Source: Department of Justice, Consent Decree Library

Telephone: Varies

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/14/04
Database Release Frequency: Varies

Date of Last EDR Contact: 04/26/05
Date of Next Scheduled EDR Contact: 07/25/05

ROD: Records Of Decision

Source: EPA
Telephone: 703-416-0223

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 01/10/05
Database Release Frequency: Annually

Date of Last EDR Contact: 04/04/05
Date of Next Scheduled EDR Contact: 07/04/05

DELISTED NPL: National Priority List Deletions

Source: EPA
Telephone: N/A

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/28/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 05/04/05
Date of Next Scheduled EDR Contact: 08/01/05

FINDS: Facility Index System/Facility Identification Initiative Program Summary Report

Source: EPA
Telephone: N/A

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/11/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/04/05
Date of Next Scheduled EDR Contact: 07/04/05

HMIRS: Hazardous Materials Information Reporting System

Source: U.S. Department of Transportation
Telephone: 202-366-4555

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/04
Database Release Frequency: Annually

Date of Last EDR Contact: 04/19/05
Date of Next Scheduled EDR Contact: 07/18/05

MLTS: Material Licensing Tracking System

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/14/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/04/05
Date of Next Scheduled EDR Contact: 07/04/05

MINES: Mines Master Index File

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/11/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 03/30/05
Date of Next Scheduled EDR Contact: 06/27/05

NPL LIENS: Federal Superfund Liens

Source: EPA
Telephone: 202-564-4267

Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 02/22/05
Date of Next Scheduled EDR Contact: 05/23/05

PADS: PCB Activity Database System

Source: EPA
Telephone: 202-564-3887

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/30/05
Database Release Frequency: Annually

Date of Last EDR Contact: 05/10/05
Date of Next Scheduled EDR Contact: 08/08/05

DOD: Department of Defense Sites

Source: USGS
Telephone: 703-692-8801

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 10/01/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 02/08/05
Date of Next Scheduled EDR Contact: 05/09/05

UMTRA: Uranium Mill Tailings Sites

Source: Department of Energy
Telephone: 505-845-0011

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized. In 1978, 24 inactive uranium mill tailings sites in Oregon, Idaho, Wyoming, Utah, Colorado, New Mexico, Texas, North Dakota, South Dakota, Pennsylvania, and on Navajo and Hopi tribal lands, were targeted for cleanup by the Department of Energy.

Date of Government Version: 12/29/04
Database Release Frequency: Varies

Date of Last EDR Contact: 03/22/05
Date of Next Scheduled EDR Contact: 06/20/05

ODI: Open Dump Inventory

Source: Environmental Protection Agency
Telephone: 800-424-9346

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/85
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 05/23/95
Date of Next Scheduled EDR Contact: N/A

FUDS: Formerly Used Defense Sites

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/31/03
Database Release Frequency: Varies

Date of Last EDR Contact: 04/04/05
Date of Next Scheduled EDR Contact: 07/04/05

INDIAN RESERV: Indian Reservations

Source: USGS
Telephone: 202-208-3710

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 10/01/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 02/08/05
Date of Next Scheduled EDR Contact: 05/09/05

US ENG CONTROLS: Engineering Controls Sites List

Source: Environmental Protection Agency
Telephone: 703-603-8867

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/10/05
Database Release Frequency: Varies

Date of Last EDR Contact: 04/04/05
Date of Next Scheduled EDR Contact: 07/04/05

RAATS: RCRA Administrative Action Tracking System

Source: EPA
Telephone: 202-564-4104

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 03/07/05
Date of Next Scheduled EDR Contact: 06/06/05

TRIS: Toxic Chemical Release Inventory System

Source: EPA
Telephone: 202-566-0250

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/02
Database Release Frequency: Annually

Date of Last EDR Contact: 03/22/05
Date of Next Scheduled EDR Contact: 06/20/05

TSCA: Toxic Substances Control Act

Source: EPA
Telephone: 202-260-5521

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/02
Database Release Frequency: Every 4 Years

Date of Last EDR Contact: 04/05/05
Date of Next Scheduled EDR Contact: 06/06/05

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

Source: EPA
Telephone: 202-566-1667

Date of Government Version: 04/13/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/21/05
Date of Next Scheduled EDR Contact: 06/20/05

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SSTS: Section 7 Tracking Systems

Source: EPA

Telephone: 202-564-4203

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/03

Date of Last EDR Contact: 04/19/05

Database Release Frequency: Annually

Date of Next Scheduled EDR Contact: 07/18/05

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

Source: EPA/Office of Prevention, Pesticides and Toxic Substances

Telephone: 202-566-1667

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/13/05

Date of Last EDR Contact: 03/21/05

Database Release Frequency: Quarterly

Date of Next Scheduled EDR Contact: 06/20/05

STATE OF CALIFORNIA ASTM STANDARD RECORDS

AWP: Annual Workplan Sites

Source: California Environmental Protection Agency

Telephone: 916-323-3400

Known Hazardous Waste Sites. California DTSC's Annual Workplan (AWP), formerly BEP, identifies known hazardous substance sites targeted for cleanup.

Date of Government Version: 02/07/05

Date of Data Arrival at EDR: 03/01/05

Date Made Active at EDR: 04/05/05

Elapsed ASTM days: 35

Database Release Frequency: Annually

Date of Last EDR Contact: 03/01/05

CAL-SITES: Calsites Database

Source: Department of Toxic Substance Control

Telephone: 916-323-3400

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database.

Date of Government Version: 02/07/05

Date of Data Arrival at EDR: 03/01/05

Date Made Active at EDR: 04/05/05

Elapsed ASTM days: 35

Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/01/05

CHMIRS: California Hazardous Material Incident Report System

Source: Office of Emergency Services

Telephone: 916-845-8400

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/03

Date of Data Arrival at EDR: 05/18/04

Date Made Active at EDR: 06/25/04

Elapsed ASTM days: 38

Database Release Frequency: Varies

Date of Last EDR Contact: 02/23/05

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

Source: CAL EPA/Office of Emergency Information

Telephone: 916-323-9100

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/01/01
Date Made Active at EDR: 07/26/01
Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 05/29/01
Elapsed ASTM days: 58
Date of Last EDR Contact: 04/25/05

NOTIFY 65: Proposition 65 Records

Source: State Water Resources Control Board
Telephone: 916-445-3846

Proposition 65 Notification Records. NOTIFY 65 contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

Date of Government Version: 10/21/93
Date Made Active at EDR: 11/19/93
Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 11/01/93
Elapsed ASTM days: 18
Date of Last EDR Contact: 04/18/05

TOXIC PITS: Toxic Pits Cleanup Act Sites

Source: State Water Resources Control Board
Telephone: 916-227-4364

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/95
Date Made Active at EDR: 09/26/95
Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 08/30/95
Elapsed ASTM days: 27
Date of Last EDR Contact: 02/01/05

SWF/LF (SWIS): Solid Waste Information System

Source: Integrated Waste Management Board
Telephone: 916-341-6320

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inventory of solid waste disposal facilities or landfills. These may be active or inactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 03/14/05
Date Made Active at EDR: 04/05/05
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 03/15/05
Elapsed ASTM days: 21
Date of Last EDR Contact: 03/15/05

WMUDS/SWAT: Waste Management Unit Database

Source: State Water Resources Control Board
Telephone: 916-227-4448

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/00
Date Made Active at EDR: 05/10/00
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 04/10/00
Elapsed ASTM days: 30
Date of Last EDR Contact: 03/07/05

LUST: Geotracker's Leaking Underground Fuel Tank Report

Source: State Water Resources Control Board
Contact: Contra Costa County Health Services Dept, (925) 646-2286

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 05/12/05
Date Made Active at EDR: 06/07/05
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 05/12/05
Elapsed ASTM days: 26
Date of Last EDR Contact: 04/13/05

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST REG 1: Active Toxic Site Investigation

Source: California Regional Water Quality Control Board North Coast (1)

Telephone: 707-576-2220

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/01

Date Made Active at EDR: 03/29/01

Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 02/28/01

Elapsed ASTM days: 29

Date of Last EDR Contact: 02/23/05

LUST REG 2: Fuel Leak List

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)

Telephone: 510-286-0457

Date of Government Version: 09/30/04

Date Made Active at EDR: 11/19/04

Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 10/20/04

Elapsed ASTM days: 30

Date of Last EDR Contact: 04/11/05

LUST REG 3: Leaking Underground Storage Tank Database

Source: California Regional Water Quality Control Board Central Coast Region (3)

Telephone: 805-549-3147

Date of Government Version: 05/19/03

Date Made Active at EDR: 06/02/03

Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 05/19/03

Elapsed ASTM days: 14

Date of Last EDR Contact: 02/14/05

LUST REG 4: Underground Storage Tank Leak List

Source: California Regional Water Quality Control Board Los Angeles Region (4)

Telephone: 213-576-6600

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/04

Date Made Active at EDR: 10/12/04

Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 09/07/04

Elapsed ASTM days: 35

Date of Last EDR Contact: 03/29/05

LUST REG 5: Leaking Underground Storage Tank Database

Source: California Regional Water Quality Control Board Central Valley Region (5)

Telephone: 916-464-3291

Date of Government Version: 04/01/05

Date Made Active at EDR: 05/06/05

Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 04/28/05

Elapsed ASTM days: 8

Date of Last EDR Contact: 04/19/05

LUST REG 6L: Leaking Underground Storage Tank Case Listing

Source: California Regional Water Quality Control Board Lahontan Region (6)

Telephone: 916-542-5424

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/03

Date Made Active at EDR: 10/07/03

Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 09/10/03

Elapsed ASTM days: 27

Date of Last EDR Contact: 04/12/05

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Source: California Regional Water Quality Control Board Victorville Branch Office (6)

Telephone: 760-346-7491

Date of Government Version: 08/09/04

Date Made Active at EDR: 10/05/04

Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 08/16/04

Elapsed ASTM days: 50

Date of Last EDR Contact: 04/15/05

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST REG 7: Leaking Underground Storage Tank Case Listing

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-346-7491

Date of Government Version: 02/26/04
Date Made Active at EDR: 03/24/04
Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 02/26/04
Elapsed ASTM days: 27
Date of Last EDR Contact: 03/29/05

LUST REG 8: Leaking Underground Storage Tanks

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-4130

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/05
Date Made Active at EDR: 03/28/05
Database Release Frequency: Varies

Date of Data Arrival at EDR: 02/15/05
Elapsed ASTM days: 41
Date of Last EDR Contact: 02/08/05

LUST REG 9: Leaking Underground Storage Tank Report

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/01
Date Made Active at EDR: 05/21/01
Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 04/23/01
Elapsed ASTM days: 28
Date of Last EDR Contact: 04/19/05

CA BOND EXP. PLAN: Bond Expenditure Plan

Source: Department of Health Services
Telephone: 916-255-2118

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/89
Date Made Active at EDR: 08/02/94
Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 07/27/94
Elapsed ASTM days: 6
Date of Last EDR Contact: 05/31/94

CA UST:

UST: Active UST Facilities

Source: SWRCB
Contact: Contra Costa County Health Services Dept, (925) 646-2286
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/12/05
Date Made Active at EDR: 05/06/05
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 04/13/05
Elapsed ASTM days: 23
Date of Last EDR Contact: 04/13/05

VCP: Voluntary Cleanup Program Properties

Source: Department of Toxic Substances Control
Telephone: 916-323-3400

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 02/07/05
Date Made Active at EDR: 03/31/05
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 03/01/05
Elapsed ASTM days: 30
Date of Last EDR Contact: 03/01/05

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

INDIAN UST: Underground Storage Tanks on Indian Land

Source: EPA Region 9
Telephone: 415-972-3368

Date of Government Version: 04/18/05
Date Made Active at EDR: 05/31/05
Database Release Frequency: Varies

Date of Data Arrival at EDR: 05/16/05
Elapsed ASTM days: 15
Date of Last EDR Contact: 05/16/05

INDIAN LUST: Leaking Underground Storage Tanks on Indian Land

Source: Environmental Protection Agency
Telephone: 415-972-3372

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 03/18/05
Date Made Active at EDR: 04/13/05
Database Release Frequency: Varies

Date of Data Arrival at EDR: 03/21/05
Elapsed ASTM days: 23
Date of Last EDR Contact: 02/22/05

INDIAN LUST: Leaking Underground Storage Tanks on Indian Land

Source: EPA Region 10
Telephone: 206-553-2857

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/02/05
Date Made Active at EDR: 03/28/05
Database Release Frequency: Varies

Date of Data Arrival at EDR: 02/02/05
Elapsed ASTM days: 54
Date of Last EDR Contact: 01/31/05

CA FID UST: Facility Inventory Database

Source: California Environmental Protection Agency
Telephone: 916-341-5851

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/94
Date Made Active at EDR: 09/29/95
Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 09/05/95
Elapsed ASTM days: 24
Date of Last EDR Contact: 12/28/98

HIST UST: Hazardous Substance Storage Container Database

Source: State Water Resources Control Board
Telephone: 916-341-5851

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/90
Date Made Active at EDR: 02/12/91
Database Release Frequency: No Update Planned

Date of Data Arrival at EDR: 01/25/91
Elapsed ASTM days: 18
Date of Last EDR Contact: 07/26/01

STATE OF CALIFORNIA ASTM SUPPLEMENTAL RECORDS

AST: Aboveground Petroleum Storage Tank Facilities

Source: State Water Resources Control Board
Telephone: 916-341-5712
Registered Aboveground Storage Tanks.

Date of Government Version: 02/01/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 02/24/05
Date of Next Scheduled EDR Contact: 05/02/05

CLEANERS: Cleaner Facilities

Source: Department of Toxic Substance Control
Telephone: 916-327-4498

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes:

power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/18/05
Database Release Frequency: Annually

Date of Last EDR Contact: 04/15/05
Date of Next Scheduled EDR Contact: 07/04/05

CA WDS: Waste Discharge System

Source: State Water Resources Control Board
Telephone: 916-341-5227

Sites which have been issued waste discharge requirements.

Date of Government Version: 03/21/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/22/05
Date of Next Scheduled EDR Contact: 06/20/05

DEED: Deed Restriction Listing

Source: Department of Toxic Substances Control
Telephone: 916-323-3400

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 04/05/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 04/04/05
Date of Next Scheduled EDR Contact: 07/04/05

NFA: No Further Action Determination

Source: Department of Toxic Substances Control
Telephone: 916-323-3400

This category contains properties at which DTSC has made a clear determination that the property does not pose a problem to the environment or to public health.

Date of Government Version: 02/07/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/01/05
Date of Next Scheduled EDR Contact: 05/30/05

EMI: Emissions Inventory Data

Source: California Air Resources Board
Telephone: 916-322-2990

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/02
Database Release Frequency: Varies

Date of Last EDR Contact: 04/22/05
Date of Next Scheduled EDR Contact: 07/18/05

WIP: Well Investigation Program Case List

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 04/26/05
Database Release Frequency: Varies

Date of Last EDR Contact: 04/25/05
Date of Next Scheduled EDR Contact: 07/25/05

REF: Unconfirmed Properties Referred to Another Agency

Source: Department of Toxic Substances Control
Telephone: 916-323-3400

This category contains properties where contamination has not been confirmed and which were determined as not requiring direct DTSC Site Mitigation Program action or oversight. Accordingly, these sites have been referred to another state or local regulatory agency.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/07/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/01/05
Date of Next Scheduled EDR Contact: 05/30/05

SCH: School Property Evaluation Program
Source: Department of Toxic Substances Control
Telephone: 916-323-3400

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 02/07/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/01/05
Date of Next Scheduled EDR Contact: 05/30/05

NFE: Properties Needing Further Evaluation
Source: Department of Toxic Substances Control
Telephone: 916-323-3400

This category contains properties that are suspected of being contaminated. These are unconfirmed contaminated properties that need to be assessed using the PEA process. PEA in Progress indicates properties where DTSC is currently conducting a PEA. PEA Required indicates properties where DTSC has determined a PEA is required, but not currently underway.

Date of Government Version: 02/07/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/01/05
Date of Next Scheduled EDR Contact: 05/30/05

SLIC: Statewide SLIC Cases
Source: State Water Resources Control Board
Contact: Contra Costa County Health Services Dept. (925) 646-2286

The Spills, Leaks, Investigations, and Cleanups (SLIC) listings includes unauthorized discharges from spills and leaks, other than from underground storage tanks or other regulated sites.

Date of Government Version: 04/12/05
Database Release Frequency: Varies

Date of Last EDR Contact: 04/13/05
Date of Next Scheduled EDR Contact: 07/11/05

SLIC REG 1: Active Toxic Site Investigations
Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220

Date of Government Version: 04/03/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 02/23/05
Date of Next Scheduled EDR Contact: 05/23/05

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457

Any contaminated site that impacts groundwater or has the potential to impact groundwater.

Date of Government Version: 09/30/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/11/05
Date of Next Scheduled EDR Contact: 07/11/05

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147

Any contaminated site that impacts groundwater or has the potential to impact groundwater.

Date of Government Version: 05/16/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 05/16/05
Date of Next Scheduled EDR Contact: 08/15/05

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600

Any contaminated site that impacts groundwater or has the potential to impact groundwater.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 11/17/04
Database Release Frequency: Varies

Date of Last EDR Contact: 04/25/05
Date of Next Scheduled EDR Contact: 07/25/05

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Unregulated sites that impact groundwater or have the potential to impact groundwater.

Date of Government Version: 04/01/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 04/05/05
Date of Next Scheduled EDR Contact: 07/04/05

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583

Date of Government Version: 05/24/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 04/18/05
Date of Next Scheduled EDR Contact: 07/04/05

SLIC REG 6L: SLIC Sites
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574

Date of Government Version: 09/07/04
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 03/07/05
Date of Next Scheduled EDR Contact: 06/06/05

SLIC REG 7: SLIC List
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491

Date of Government Version: 11/24/04
Database Release Frequency: Varies

Date of Last EDR Contact: 02/22/05
Date of Next Scheduled EDR Contact: 05/23/05

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298

Date of Government Version: 07/01/04
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 04/06/05
Date of Next Scheduled EDR Contact: 07/04/05

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980

Date of Government Version: 09/10/04
Database Release Frequency: Annually

Date of Last EDR Contact: 03/01/05
Date of Next Scheduled EDR Contact: 05/30/05

HAZNET: Facility and Manifest Data
Source: California Environmental Protection Agency
Telephone: 916-255-1136

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/02
Database Release Frequency: Annually

Date of Last EDR Contact: 02/17/05
Date of Next Scheduled EDR Contact: 05/09/05

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LOCAL RECORDS

ALAMEDA COUNTY:

Underground Tanks

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700

Date of Government Version: 02/15/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 04/25/05
Date of Next Scheduled EDR Contact: 07/25/05

Contaminated Sites

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 05/25/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 04/25/05
Date of Next Scheduled EDR Contact: 07/25/05

CONTRA COSTA COUNTY:

Site List

Source: Contra Costa Health Services Department
Telephone: 925-646-2286

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/04/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 02/28/05
Date of Next Scheduled EDR Contact: 05/30/05

FRESNO COUNTY:

CUPA Resources List

Source: Dept. of Community Health
Telephone: 559-445-3271

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 03/31/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 01/19/05
Date of Next Scheduled EDR Contact: 05/09/05

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Kern County Sites and Tanks Listing.

Date of Government Version: 05/10/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 05/02/05
Date of Next Scheduled EDR Contact: 09/05/05

LOS ANGELES COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

List of Solid Waste Facilities

Source: La County Department of Public Works
Telephone: 818-458-5185

Date of Government Version: 02/01/05
Database Release Frequency: Varies

Date of Last EDR Contact: 02/18/05
Date of Next Scheduled EDR Contact: 05/16/05

City of El Segundo Underground Storage Tank

Source: City of El Segundo Fire Department
Telephone: 310-524-2236

Date of Government Version: 05/31/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 05/16/05
Date of Next Scheduled EDR Contact: 08/15/05

City of Long Beach Underground Storage Tank

Source: City of Long Beach Fire Department
Telephone: 562-570-2563

Date of Government Version: 03/28/03
Database Release Frequency: Annually

Date of Last EDR Contact: 02/23/05
Date of Next Scheduled EDR Contact: 05/23/05

City of Torrance Underground Storage Tank

Source: City of Torrance Fire Department
Telephone: 310-618-2973

Date of Government Version: 03/24/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 02/28/05
Date of Next Scheduled EDR Contact: 05/16/05

City of Los Angeles Landfills

Source: Engineering & Construction Division
Telephone: 213-473-7869

Date of Government Version: 03/01/05
Database Release Frequency: Varies

Date of Last EDR Contact: 03/18/05
Date of Next Scheduled EDR Contact: 06/13/05

HMS: Street Number List

Source: Department of Public Works
Telephone: 626-458-3517
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 02/28/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 02/14/05
Date of Next Scheduled EDR Contact: 05/16/05

Site Mitigation List

Source: Community Health Services
Telephone: 323-890-7806
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/09/05
Database Release Frequency: Annually

Date of Last EDR Contact: 02/14/05
Date of Next Scheduled EDR Contact: 05/16/05

San Gabriel Valley Areas of Concern

Source: EPA Region 9
Telephone: 415-972-3178
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 12/31/98
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 07/06/99
Date of Next Scheduled EDR Contact: N/A

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

MARIN COUNTY:

Underground Storage Tank Sites

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Currently permitted USTs in Marin County.

Date of Government Version: 02/08/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 01/31/05
Date of Next Scheduled EDR Contact: 05/02/05

NAPA COUNTY:

Sites With Reported Contamination

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269

Date of Government Version: 03/29/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 03/28/05
Date of Next Scheduled EDR Contact: 06/27/05

Closed and Operating Underground Storage Tank Sites

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269

Date of Government Version: 03/29/05
Database Release Frequency: Annually

Date of Last EDR Contact: 03/28/05
Date of Next Scheduled EDR Contact: 06/27/05

ORANGE COUNTY:

List of Underground Storage Tank Cleanups

Source: Health Care Agency
Telephone: 714-834-3446
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/01/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/11/05
Date of Next Scheduled EDR Contact: 06/06/05

List of Underground Storage Tank Facilities

Source: Health Care Agency
Telephone: 714-834-3446
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 03/01/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/11/05
Date of Next Scheduled EDR Contact: 06/06/05

List of Industrial Site Cleanups

Source: Health Care Agency
Telephone: 714-834-3446
Petroleum and non-petroleum spills.

Date of Government Version: 03/01/05
Database Release Frequency: Annually

Date of Last EDR Contact: 03/11/05
Date of Next Scheduled EDR Contact: 06/06/05

PLACER COUNTY:

Master List of Facilities

Source: Placer County Health and Human Services
Telephone: 530-889-7312
List includes aboveground tanks, underground tanks and cleanup sites.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/05/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 03/21/05
Date of Next Scheduled EDR Contact: 06/20/05

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites

Source: Department of Public Health
Telephone: 951-358-5055
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/24/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/18/05
Date of Next Scheduled EDR Contact: 07/18/05

Underground Storage Tank Tank List

Source: Health Services Agency
Telephone: 951-358-5055

Date of Government Version: 05/24/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/18/05
Date of Next Scheduled EDR Contact: 07/18/05

SACRAMENTO COUNTY:

CS - Contaminated Sites

Source: Sacramento County Environmental Management
Telephone: 916-875-8406

Date of Government Version: 04/06/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 05/06/05
Date of Next Scheduled EDR Contact: 08/01/05

ML - Regulatory Compliance Master List

Source: Sacramento County Environmental Management
Telephone: 916-875-8406

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 03/29/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 05/06/05
Date of Next Scheduled EDR Contact: 08/01/05

SAN BERNARDINO COUNTY:

Hazardous Material Permits

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/25/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/07/05
Date of Next Scheduled EDR Contact: 06/06/05

SAN DIEGO COUNTY:

Solid Waste Facilities

Source: Department of Health Services
Telephone: 619-338-2209
San Diego County Solid Waste Facilities.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 08/01/00
Database Release Frequency: Varies

Date of Last EDR Contact: 02/22/05
Date of Next Scheduled EDR Contact: 05/23/05

Hazardous Materials Management Division Database

Source: Hazardous Materials Management Division
Telephone: 619-338-2268

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 05/16/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/22/05
Date of Next Scheduled EDR Contact: 07/04/05

SAN FRANCISCO COUNTY:

Local Oversight Facilities

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920

Date of Government Version: 03/09/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/07/05
Date of Next Scheduled EDR Contact: 06/06/05

Underground Storage Tank Information

Source: Department of Public Health
Telephone: 415-252-3920

Date of Government Version: 03/09/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/07/05
Date of Next Scheduled EDR Contact: 06/06/05

SAN MATEO COUNTY:

Fuel Leak List

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921

Date of Government Version: 05/05/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 04/11/05
Date of Next Scheduled EDR Contact: 07/11/05

Business Inventory

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 05/12/05
Database Release Frequency: Annually

Date of Last EDR Contact: 04/11/05
Date of Next Scheduled EDR Contact: 07/11/05

SANTA CLARA COUNTY:

Fuel Leak Site Activity Report

Source: Santa Clara Valley Water District
Telephone: 408-265-2600

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/29/05
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 03/29/05
Date of Next Scheduled EDR Contact: 06/27/05

Hazardous Material Facilities

Source: City of San Jose Fire Department
Telephone: 408-277-4659

Date of Government Version: 01/14/05
Database Release Frequency: Annually

Date of Last EDR Contact: 03/07/05
Date of Next Scheduled EDR Contact: 06/06/05

SOLANO COUNTY:

Leaking Underground Storage Tanks

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770

Date of Government Version: 04/18/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/18/05
Date of Next Scheduled EDR Contact: 06/13/05

Underground Storage Tanks

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770

Date of Government Version: 04/18/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/18/05
Date of Next Scheduled EDR Contact: 06/13/05

SONOMA COUNTY:

Leaking Underground Storage Tank Sites

Source: Department of Health Services
Telephone: 707-565-6565

Date of Government Version: 04/25/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/25/05
Date of Next Scheduled EDR Contact: 07/25/05

SUTTER COUNTY:

Underground Storage Tanks

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500

Date of Government Version: 01/29/04
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 04/18/05
Date of Next Scheduled EDR Contact: 07/04/05

VENTURA COUNTY:

Inventory of Illegal Abandoned and Inactive Sites

Source: Environmental Health Division
Telephone: 805-654-2813
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 08/01/04
Database Release Frequency: Annually

Date of Last EDR Contact: 02/23/05
Date of Next Scheduled EDR Contact: 05/23/05

Listing of Underground Tank Cleanup Sites

Source: Environmental Health Division
Telephone: 805-654-2813
Ventura County Underground Storage Tank Cleanup Sites (LUST).

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/01/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/18/05
Date of Next Scheduled EDR Contact: 06/13/05

Underground Tank Closed Sites List

Source: Environmental Health Division
Telephone: 805-654-2813

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/30/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/15/05
Date of Next Scheduled EDR Contact: 07/11/05

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813

The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 03/01/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/18/05
Date of Next Scheduled EDR Contact: 06/13/05

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Source: Yolo County Department of Health
Telephone: 530-666-8646

Date of Government Version: 04/19/05
Database Release Frequency: Annually

Date of Last EDR Contact: 04/18/05
Date of Next Scheduled EDR Contact: 07/18/05

EDR PROPRIETARY HISTORICAL DATABASES

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

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The information contained in this report has predominantly been obtained from publicly available sources produced by entities other than Real Property Scan. While reasonable steps have been taken to insure the accuracy of this report, Real Property Scan does not guarantee the accuracy of this report. Any liability on the part of Real Property Scan is strictly limited to a refund of the amount paid. No claim is made for the actual existence of toxins at any site. This report does not constitute a legal opinion.

BROWNFIELDS DATABASES

VCP: Voluntary Cleanup Program Properties

Source: Department of Toxic Substances Control
Telephone: 916-323-3400

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 02/07/05
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/01/05
Date of Next Scheduled EDR Contact: 05/30/05

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

US BROWNFIELDS: A Listing of Brownfields Sites

Source: Environmental Protection Agency

Telephone: 202-566-2777

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 01/10/05

Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 03/14/05

Date of Next Scheduled EDR Contact: 06/13/05

US INST CONTROL: Sites with Institutional Controls

Source: Environmental Protection Agency

Telephone: 703-603-8867

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/10/05

Database Release Frequency: Varies

Date of Last EDR Contact: 04/04/05

Date of Next Scheduled EDR Contact: 07/04/05

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data

Source: PennWell Corporation

Telephone: (800) 823-6277

This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.

Telephone: 312-280-5991

The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services

Telephone: 410-786-3000

A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Nursing Homes

Source: National Institutes of Health

Telephone: 301-594-6248

Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities

Source: Department of Social Services

Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION

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GEOCHECK[®] - PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

SULLENGER RANCH
DEER VALLEY RD
ANTIOCH, CA 94531

TARGET PROPERTY COORDINATES

Latitude (North):	37.940601 - 37° 56' 26.2"
Longitude (West):	121.769897 - 121° 46' 11.6"
Universal Transverse Mercator:	Zone 10
UTM X (Meters):	608091.3
UTM Y (Meters):	4199732.5
Elevation:	269 ft. above sea level

EDR's GeoCheck Physical Setting Source Addendum has been developed to assist the environmental professional with the collection of physical setting source information in accordance with ASTM 1527-00, Section 7.2.3. Section 7.2.3 requires that a current USGS 7.5 Minute Topographic Map (or equivalent, such as the USGS Digital Elevation Model) be reviewed. It also requires that one or more additional physical setting sources be sought when (1) conditions have been identified in which hazardous substances or petroleum products are likely to migrate to or from the property, and (2) more information than is provided in the current USGS 7.5 Minute Topographic Map (or equivalent) is generally obtained, pursuant to local good commercial or customary practice, to assess the impact of migration of recognized environmental conditions in connection with the property. Such additional physical setting sources generally include information about the topographic, hydrologic, hydrogeologic, and geologic characteristics of a site, and wells in the area.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata. EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

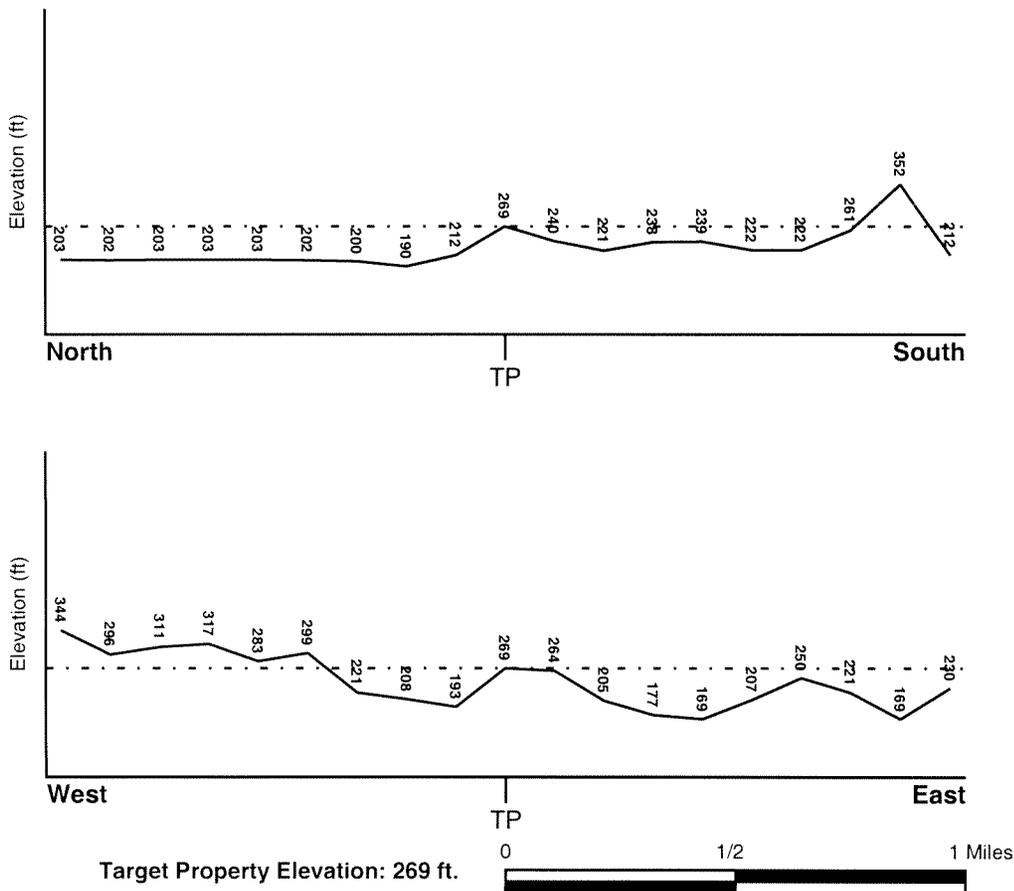
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

USGS Topographic Map: 37121-H7 ANTIOCH SOUTH, CA
 General Topographic Gradient: General NNE
 Source: USGS 7.5 min quad index

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

<u>Target Property County</u> CONTRA COSTA, CA	FEMA Flood <u>Electronic Data</u> YES - refer to the Overview Map and Detail Map
Flood Plain Panel at Target Property:	0600250335B
Additional Panels in search area:	0600250350B

NATIONAL WETLAND INVENTORY

<u>NWI Quad at Target Property</u> ANTIOCH SOUTH	NWI Electronic <u>Data Coverage</u> YES - refer to the Overview Map and Detail Map
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HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

<u>MAP ID</u>	<u>LOCATION FROM TP</u>	<u>GENERAL DIRECTION GROUNDWATER FLOW</u>
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era: Cenozoic
System: Tertiary
Series: Eocene
Code: Te (decoded above as Era, System & Series)

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name: CAPAY
Soil Surface Texture: clay
Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.
Soil Drainage Class: Moderately well drained. Soils have a layer of low hydraulic conductivity, wet state high in the profile. Depth to water table is 3 to 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: HIGH

Depth to Bedrock Min: > 60 inches

Depth to Bedrock Max: > 60 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
Layer	Boundary		Soil Texture Class	Classification		Permeability Rate (in/hr)	Soil Reaction (pH)
	Upper	Lower		AASHTO Group	Unified Soil		
1	0 inches	32 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.20 Min: 0.06	Max: 8.40 Min: 5.60
2	32 inches	50 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.20 Min: 0.06	Max: 8.40 Min: 6.60
3	50 inches	62 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.20 Min: 0.06	Max: 8.40 Min: 6.60

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: clay loam
silt loam
silty clay loam
sand
loam

Surficial Soil Types: clay loam
silt loam
silty clay loam
sand
loam

Shallow Soil Types: silty clay loam
sand
clay
stratified

Deeper Soil Types: clay loam
stratified
gravelly - loam
sand
clay

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

ADDITIONAL ENVIRONMENTAL RECORD SOURCES

According to ASTM E 1527-00, Section 7.2.2, "one or more additional state or local sources of environmental records may be checked, in the discretion of the environmental professional, to enhance and supplement federal and state sources... Factors to consider in determining which local or additional state records, if any, should be checked include (1) whether they are reasonably ascertainable, (2) whether they are sufficiently useful, accurate, and complete in light of the objective of the records review (see 7.1.1), and (3) whether they are obtained, pursuant to local, good commercial or customary practice." One of the record sources listed in Section 7.2.2 is water well information. Water well information can be used to assist the environmental professional in assessing sources that may impact groundwater flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

<u>DATABASE</u>	<u>SEARCH DISTANCE (miles)</u>
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
No Wells Found		

STATE OIL/GAS WELL INFORMATION

<u>DISTANCE FROM TP (Miles)</u>	<u>DISTANCE FROM TP (Miles)</u>
1/2 - 1 Mile North	1/2 - 1 Mile North
1/2 - 1 Mile North	1/2 - 1 Mile North
1/2 - 1 Mile NNW	1/2 - 1 Mile North
1/2 - 1 Mile North	1/2 - 1 Mile North
1/2 - 1 Mile NNW	1/2 - 1 Mile North
1/2 - 1 Mile NNE	1/2 - 1 Mile NE
1/2 - 1 Mile NNE	1/2 - 1 Mile NE
1/4 - 1/2 Mile North	1/2 - 1 Mile NE
1/4 - 1/2 Mile NNW	1/2 - 1 Mile ENE
1/4 - 1/2 Mile NNE	1/4 - 1/2 Mile North
1/2 - 1 Mile WNW	1/4 - 1/2 Mile NW

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE OIL/GAS WELL INFORMATION

DISTANCE
FROM TP (Miles)

1/2 - 1 Mile East
1/2 - 1 Mile East
1/4 - 1/2 Mile East
1/2 - 1 Mile West
1/4 - 1/2 Mile WSW
1/2 - 1 Mile ESE
1/4 - 1/2 Mile SW
1/2 - 1 Mile WSW

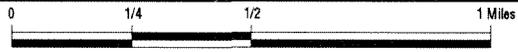
DISTANCE
FROM TP (Miles)

1/8 - 1/4 Mile ENE
1/4 - 1/2 Mile West
1/2 - 1 Mile West
1/8 - 1/4 Mile SSW
1/2 - 1 Mile WSW
1/4 - 1/2 Mile ESE
1/2 - 1 Mile East
1/2 - 1 Mile South

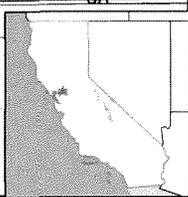
PHYSICAL SETTING SOURCE MAP - 01454086.2r



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons



- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells



TARGET PROPERTY: Sullenger Ranch
ADDRESS: Deer Valley Rd
CITY/STATE/ZIP: Antioch CA 94531
LAT/LONG: 37.9406 / 121.7699

CUSTOMER: Engeo Inc.
CONTACT: Kelsey Adams
INQUIRY #: 01454086.2r
DATE: June 27, 2005 2:17 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Direction
Distance

Database FDR ID Number

North
1/2 - 1 Mile

OIL_GAS CA00004411

Well Number:	5-6	Status:	Plugged and abandoned oil
API Number:	01320235	Operator:	Venada National
Latitude:	37.95478	Longitude:	-121.76884
Region:	6	Lease:	Prewett
Section:	05	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	3915.00000
Spud Date:	10/5/1984	Abandonment Date:	8/11/1989

North
1/2 - 1 Mile

OIL_GAS CA00004405

Well Number:	34-4	Status:	Plugged and abandoned oil-directional
API Number:	01320252	Operator:	Occidental Petroleum Corp.
Latitude:	37.95467	Longitude:	-121.76773
Region:	6	Lease:	Williamson
Section:	04	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4400.00000
Spud Date:	8/19/1985	Abandonment Date:	3/27/1992

North
1/2 - 1 Mile

OIL_GAS CA00004404

Well Number:	4	Status:	Plugged and abandoned oil-directional
API Number:	01320250	Operator:	Venturini Associates, Inc.
Latitude:	37.95416	Longitude:	-121.76701
Region:	6	Lease:	Williamson
Section:	09	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	3802.00000
Spud Date:	8/6/1985	Abandonment Date:	8/16/1985

North
1/2 - 1 Mile

OIL_GAS CA00004414

Well Number:	3	Status:	Plugged and abandoned oil
API Number:	01320240	Operator:	Venturini Associates, Inc.
Latitude:	37.95403	Longitude:	-121.76773
Region:	6	Lease:	Williamson
Section:	09	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	3835.00000
Spud Date:	10/29/1984	Abandonment Date:	12/10/1987

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Direction _____ Database _____
 Distance _____ EDR ID Number _____

NNW **OIL_GAS** **CA00004356**
1/2 - 1 Mile

Well Number: 4	Status: Plugged and abandoned oil
API Number: 01320292	Operator: Venturini Associates, Inc.
Latitude: 37.95403	Longitude: -121.77220
Region: 6	Lease: Enea-Capitol
Section: 08	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4005.00000
Spud Date: 7/28/1989	Abandonment Date: 11/3/1993

North **OIL_GAS** **CA00004393**
1/2 - 1 Mile

Well Number: 1	Status: Plugged and abandoned oil
API Number: 01320264	Operator: Venturini Associates, Inc.
Latitude: 37.95397	Longitude: -121.76914
Region: 6	Lease: Enea
Section: 08	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 3920.00000
Spud Date: 8/14/1986	Abandonment Date: 9/1/1993

North **OIL_GAS** **CA00004423**
1/2 - 1 Mile

Well Number: 2	Status: Plugged and abandoned oil-directional
API Number: 01320226	Operator: Venturini Associates, Inc.
Latitude: 37.95334	Longitude: -121.76680
Region: 6	Lease: Williamson
Section: 09	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4329.00000
Spud Date: 3/7/1984	Abandonment Date: 11/20/1995

North **OIL_GAS** **CA00004394**
1/2 - 1 Mile

Well Number: 2	Status: Plugged and abandoned oil
API Number: 01320265	Operator: Venturini Associates, Inc.
Latitude: 37.95194	Longitude: -121.76914
Region: 6	Lease: Enea
Section: 08	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4058.00000
Spud Date: 11/11/1986	Abandonment Date: 8/30/1993

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Direction _____ Database _____ EDR ID Number _____
 Distance _____

NNW **OIL_GAS** **CA00004900**
1/2 - 1 Mile

Well Number: 2-8	Status: Completed gas
API Number: 01300034	Operator: Occidental Petroleum Corp.
Latitude: 37.95163	Longitude: -121.77250
Region: 6	Lease: Enea-Capital
Section: 08	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 5100.00000
Spud Date: 7/1/1964	Abandonment Date: 4/7/1992

North **OIL_GAS** **CA00004377**
1/2 - 1 Mile

Well Number: 3	Status: Plugged and abandoned oil
API Number: 01320269	Operator: Venturini Associates, Inc.
Latitude: 37.95143	Longitude: -121.76876
Region: 6	Lease: Capital-Enea
Section: 08	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4710.00000
Spud Date: 4/11/1987	Abandonment Date: 11/2/1993

NNE **OIL_GAS** **CA00004865**
1/2 - 1 Mile

Well Number: 1-9	Status: Plugged and abandoned-dry hole
API Number: 01300067	Operator: SWEPI
Latitude: 37.95071	Longitude: -121.76323
Region: 6	Lease: Williamson
Section: 09	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 5000.00000
Spud Date: 10/1/1962	Abandonment Date: 7/27/1964

NE **OIL_GAS** **CA00004626**
1/2 - 1 Mile

Well Number: 22-9	Status: Plugged and abandoned gas
API Number: 01320005	Operator: Occidental Petroleum Corp.
Latitude: 37.94934	Longitude: -121.75681
Region: 6	Lease: Ginochio
Section: 09	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4239.00000
Spud Date: 7/7/1967	Abandonment Date: 9/26/1991

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Direction _____ Database _____
 Distance _____ EDR ID Number _____

NNE **OIL_GAS** **CA00004866**
1/2 - 1 Mile

Well Number: 11-9	Status: Plugged and abandoned-dry hole
API Number: 01300068	Operator: SWEPI
Latitude: 37.94790	Longitude: -121.76323
Region: 6	Lease: Williamson
Section: 09	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 5390.00000
Spud Date: 12/22/1962	Abandonment Date: 1/1/1963

NE **OIL_GAS** **CA00004433**
1/2 - 1 Mile

Well Number: 1	Status: Plugged and abandoned-dry hole-directional
API Number: 01320212	Operator: Venturini Associates, Inc.
Latitude: 37.94631	Longitude: -121.76273
Region: 6	Lease: Williamson
Section: 09	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4502.00000
Spud Date: 8/27/1983	Abandonment Date: 9/5/1983

North **OIL_GAS** **CA00004584**
1/4 - 1/2 Mile

Well Number: 1	Status: Plugged and abandoned oil
API Number: 01320051	Operator: Venturini Associates, Inc.
Latitude: 37.94596	Longitude: -121.76962
Region: 6	Lease: Sullenger
Section: 08	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4161.00000
Spud Date: 6/16/1969	Abandonment Date: 6/6/1995

NE **OIL_GAS** **CA00004586**
1/2 - 1 Mile

Well Number: 1	Status: Plugged and abandoned-dry hole-directional
API Number: 01320053	Operator: Sinco Oil Corp.
Latitude: 37.94595	Longitude: -121.75962
Region: 6	Lease: Williamson
Section: 09	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4504.00000
Spud Date: 7/23/1969	Abandonment Date: 8/2/1969

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Direction _____ Database _____ EDR ID Number _____
 Distance _____

NNW
1/4 - 1/2 Mile

OIL_GAS CA00004567

Well Number:	2	Status:	Plugged and abandoned-dry hole-directional
API Number:	01320079	Operator:	Sinco Oil Corp.
Latitude:	37.94560	Longitude:	-121.77217
Region:	6	Lease:	Sullenger
Section:	08	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4264.00000
Spud Date:	12/16/1971	Abandonment Date:	12/31/1971

ENE
1/2 - 1 Mile

OIL_GAS CA00004884

Well Number:	4-9	Status:	Plugged and abandoned oil
API Number:	01300041	Operator:	Occidental Petroleum Corp.
Latitude:	37.94533	Longitude:	-121.75410
Region:	6	Lease:	Ginochio-Shellenberger
Section:	09	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4300.00000
Spud Date:	7/6/1962	Abandonment Date:	8/12/1985

NNE
1/4 - 1/2 Mile

OIL_GAS CA00004871

Well Number:	3-9	Status:	Plugged and abandoned oil
API Number:	01300073	Operator:	Occidental Petroleum Corp.
Latitude:	37.94501	Longitude:	-121.76592
Region:	6	Lease:	Williamson
Section:	09	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4914.00000
Spud Date:	6/28/1963	Abandonment Date:	12/2/1993

North
1/4 - 1/2 Mile

OIL_GAS CA00004882

Well Number:	4-8	Status:	Plugged and abandoned oil
API Number:	01300061	Operator:	Occidental Petroleum Corp.
Latitude:	37.94450	Longitude:	-121.76945
Region:	6	Lease:	Sullenger
Section:	08	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	5000.00000
Spud Date:	10/5/1963	Abandonment Date:	12/6/1993

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Direction		Database
Distance		EDR ID Number

WNW
1/2 - 1 Mile **OIL_GAS** **CA00004878**

Well Number: 3-8	Status: Plugged and abandoned-dry hole
API Number: 01300057	Operator: SWEPI
Latitude: 37.94419	Longitude: -121.78161
Region: 6	Lease: Qvale
Section: 08	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4857.00000
Spud Date: 12/5/1962	Abandonment Date: 12/21/1962

NW
1/4 - 1/2 Mile **OIL_GAS** **CA00004863**

Well Number: 42-8	Status: Plugged and abandoned oil
API Number: 01300065	Operator: Occidental Petroleum Corp.
Latitude: 37.94409	Longitude: -121.77353
Region: 6	Lease: Sullenger
Section: 08	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4396.00000
Spud Date: 1/16/1964	Abandonment Date: 12/8/1993

East
1/2 - 1 Mile **OIL_GAS** **CA00004887**

Well Number: 41-9	Status: Plugged and abandoned gas-directional
API Number: 01300044	Operator: Occidental Petroleum Corp.
Latitude: 37.94272	Longitude: -121.75317
Region: 6	Lease: Ginochio-Shellenberger
Section: 09	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4939.00000
Spud Date: 3/14/1963	Abandonment Date: 9/28/1991

ENE
1/8 - 1/4 Mile **OIL_GAS** **CA00004883**

Well Number: 31-9	Status: Plugged and abandoned-dry hole
API Number: 01300062	Operator: SWEPI
Latitude: 37.94244	Longitude: -121.76533
Region: 6	Lease: Sullenger
Section: 09	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 5000.00000
Spud Date: 8/16/1963	Abandonment Date: 8/28/1963

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Direction _____ Database _____ EDR ID Number _____
 Distance _____

East
1/2 - 1 Mile **OIL_GAS** **CA00004925**

Well Number:	42-9	Status:	Plugged and abandoned oil
API Number:	01300016	Operator:	Occidental Petroleum Corp.
Latitude:	37.94149	Longitude:	-121.75108
Region:	6	Lease:	Ginochio-Shellenberger
Section:	09	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4100.00000
Spud Date:	8/29/1963	Abandonment Date:	10/17/1991

West
1/4 - 1/2 Mile **OIL_GAS** **CA00004880**

Well Number:	41-8	Status:	Plugged and abandoned-dry hole
API Number:	01300059	Operator:	SWEPI
Latitude:	37.94133	Longitude:	-121.77528
Region:	6	Lease:	Qvale
Section:	08	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4500.00000
Spud Date:	11/28/1963	Abandonment Date:	12/6/1963

East
1/4 - 1/2 Mile **OIL_GAS** **CA00004862**

Well Number:	33-9	Status:	Plugged and abandoned-dry hole
API Number:	01300064	Operator:	SWEPI
Latitude:	37.94120	Longitude:	-121.76273
Region:	6	Lease:	Sullenger
Section:	09	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4351.00000
Spud Date:	4/3/1964	Abandonment Date:	4/12/1964

West
1/2 - 1 Mile **OIL_GAS** **CA00004549**

Well Number:	1	Status:	Plugged and abandoned gas
API Number:	01320083	Operator:	Sinco Oil Corp.
Latitude:	37.94072	Longitude:	-121.78370
Region:	6	Lease:	Qvale
Section:	08	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4347.00000
Spud Date:	1/22/1972	Abandonment Date:	6/10/1988

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Direction _____ Database _____ FDR ID Number _____
 Distance _____

West
1/2 - 1 Mile **OIL_GAS** **CA00004879**

Well Number: 2	Status: Plugged and abandoned gas
API Number: 01300058	Operator: Sinco Oil Corp.
Latitude: 37.94051	Longitude: -121.77860
Region: 6	Lease: Qvale
Section: 08	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4425.00000
Spud Date: 1/5/1964	Abandonment Date: 6/13/1988

SSW
1/8 - 1/4 Mile **OIL_GAS** **CA00004379**

Well Number: 2	Status: Plugged and abandoned oil
API Number: 01320271	Operator: Venturini Associates, Inc.
Latitude: 37.93896	Longitude: -121.76963
Region: 6	Lease: Ginochio
Section: 17	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4300.00000
Spud Date: 7/5/1987	Abandonment Date: 4/22/1993

WSW
1/4 - 1/2 Mile **OIL_GAS** **CA00004912**

Well Number: 51-17	Status: Plugged and abandoned gas
API Number: 01300024	Operator: Venturini Associates, Inc.
Latitude: 37.93880	Longitude: -121.77596
Region: 6	Lease: Ginochio
Section: 17	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4219.00000
Spud Date: 9/12/1963	Abandonment Date: 8/25/1986

WSW
1/2 - 1 Mile **OIL_GAS** **CA00004907**

Well Number: 41-17	Status: Plugged and abandoned gas
API Number: 01300019	Operator: Venturini Associates, Inc.
Latitude: 37.93879	Longitude: -121.77839
Region: 6	Lease: Ginochio
Section: 17	Township: 01N
Range: 02E	Map Number: 608
Base and Meridian: Mount Diablo	Total Depth: 4293.00000
Spud Date: 10/1/1963	Abandonment Date: 8/6/1984

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Direction _____ Database _____ FDR ID Number _____
 Distance _____

ESE
1/2 - 1 Mile **OIL_GAS** **CA00004885**

Well Number:	21-16	Status:	Plugged and abandoned-dry hole
API Number:	01300042	Operator:	SWEPI
Latitude:	37.93862	Longitude:	-121.75704
Region:	6	Lease:	Ginochio-Shellenberger
Section:	16	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4780.00000
Spud Date:	7/17/1963	Abandonment Date:	7/29/1963

ESE
1/4 - 1/2 Mile **OIL_GAS** **CA00004903**

Well Number:	1-16	Status:	Plugged and abandoned-dry hole
API Number:	01300037	Operator:	Occidental Petroleum Corp.
Latitude:	37.93858	Longitude:	-121.76027
Region:	6	Lease:	Ginochio
Section:	16	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4535.00000
Spud Date:	5/17/1963	Abandonment Date:	5/14/1992

SW
1/4 - 1/2 Mile **OIL_GAS** **CA00004376**

Well Number:	1	Status:	Plugged and abandoned oil
API Number:	01320268	Operator:	Venturini Associates, Inc.
Latitude:	37.93816	Longitude:	-121.77231
Region:	6	Lease:	Ginochio
Section:	17	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4337.00000
Spud Date:	3/31/1987	Abandonment Date:	6/26/1990

East
1/2 - 1 Mile **OIL_GAS** **CA00004895**

Well Number:	2-16	Status:	116
API Number:	01300040	Operator:	Occidental Petroleum Corp.
Latitude:	37.93801	Longitude:	-121.75190
Region:	6	Lease:	Ginochio-Shellenberger
Section:	16	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4746.00000
Spud Date:	12/1/1962	Abandonment Date:	12/17/1993

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Direction
Distance

Database EDR ID Number

WSW
1/2 - 1 Mile

OIL_GAS CA00004911

Well Number:	32-17	Status:	Plugged and abandoned-dry hole-directional
API Number:	01300023	Operator:	Sinco Oil Corp.
Latitude:	37.93691	Longitude:	-121.78064
Region:	6	Lease:	Ginochio
Section:	17	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4296.00000
Spud Date:	2/7/1964	Abandonment Date:	2/27/1964

South
1/2 - 1 Mile

OIL_GAS CA00004913

Well Number:	85-17	Status:	Plugged and abandoned-dry hole-directional
API Number:	01300025	Operator:	Occidental Petroleum Corp.
Latitude:	37.93151	Longitude:	-121.76913
Region:	6	Lease:	Ginochio
Section:	17	Township:	01N
Range:	02E	Map Number:	608
Base and Meridian:	Mount Diablo	Total Depth:	4483.00000
Spud Date:	10/23/1963	Abandonment Date:	11/5/1963

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for CONTRA COSTA County: 2

- Note: Zone 1 indoor average level > 4 pCi/L.
 : Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
 : Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for CONTRA COSTA COUNTY, CA

Number of sites tested: 55

<u>Area</u>	<u>Average Activity</u>	<u>% <4 pCi/L</u>	<u>% 4-20 pCi/L</u>	<u>% >20 pCi/L</u>
Living Area - 1st Floor	0.760 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.300 pCi/L	100%	0%	0%
Basement	0.525 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)

Source: United States Geologic Survey

EDR acquired the USGS 7.5' Digital Elevation Model in 2002. 7.5-Minute DEMs correspond to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^R Information System

Source: EDR proprietary database of groundwater flow information

EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit

Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database

Source: Department of Agriculture, Natural Resources Conservation Services

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

ADDITIONAL ENVIRONMENTAL RECORD SOURCES

FEDERAL WATER WELLS

PWS: Public Water Systems

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)

This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STATE RECORDS

California Drinking Water Quality Database

Source: Department of Health Services

Telephone: 916-324-2319

The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations for District 2, 3, 5 and 6

Source: Department of Conservation

Telephone: 916-323-1779

RADON

State Database: CA Radon

Source: Department of Health Services

Telephone: 916-324-2208

Radon Database for California

Area Radon Information

Source: USGS

Telephone: 703-356-4020

The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones

Source: EPA

Telephone: 703-356-4020

Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities

Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater

Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

APPENDIX B

Preliminary Title Report

DRAFT

**2nd Supplemental
report**



First American Title

**6665 Owens Drive
Pleasanton, CA 94588**

Roberta Mantzouris
Centex Homes
2527 Camino Ramon, Suite 100
San Ramon, CA 94583
Phone: (925) 415-1600

Escrow Officer: Michelle Chan (MC)
Phone: (925) 460-8228
Fax No.: (925) 463-9683
E-Mail: mlchan@firstam.com

Title Officer: Sue Pratt
Phone: (925) 356-7048
Fax No.: (925) 680-5239
E-Mail: spratt@firstam.com
Buyer: Centex Homes
Owner: Albers, et al
Property: APN: 057-042-006, 057-050-005

PRELIMINARY REPORT

In response to the above referenced application for a policy of title insurance, this company hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a Policy or Policies of Title Insurance describing the land and the estate or interest therein hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referred to as an Exception below or not excluded from coverage pursuant to the printed Schedules, Conditions and Stipulations of said Policy forms.

The printed Exceptions and Exclusions from the coverage of said Policy or Policies are set forth in Exhibit A attached. Copies of the Policy forms should be read. They are available from the office which issued this report.

Please read the exceptions shown or referred to below and the exceptions and exclusions set forth in Exhibit A of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters which are not covered under the terms of the title insurance policy and should be carefully considered.

It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects, and encumbrances affecting title to the land.

This report (and any supplements or amendments hereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance, a Binder or Commitment should be requested.

Dated as of May 23, 2005 at 7:30 A.M.

The form of Policy of title insurance contemplated by this report is:

1992 ALTA Owner's Policy (10-17-92)

A specific request should be made if another form or additional coverage is desired.

Title to said estate or interest at the date hereof is vested in:

Monte Albers and Lucia Albers, co-trustees of the Monte Albers and Lucia Albers Trust, dated June 4, 1985, as to an undivided 20% interest; Hillside Group LLC, a California limited liability company as to an undivided 30% interest; and John T. Camara and Margaret Camara, his wife, as joint tenants, as to an undivided 50% interest

The estate or interest in the land hereinafter described or referred to covered by this Report is:

A fee.

The Land referred to herein is described as follows:

(See attached Legal Description)

At the date hereof exceptions to coverage in addition to the printed Exceptions and Exclusions in said policy form would be as follows:

1. General and special taxes and assessments for the fiscal year 2005-2006, a lien not yet due or payable.
2. The lien of supplemental taxes, if any, assessed pursuant to Chapter 3.5 commencing with Section 75 of the California Revenue and Taxation Code.
3. The lien of bonds and assessment liens, if applicable, collected with the general and special taxes.
4. Any easement for water course over that portion of premises lying within Sand Creek.
5. An easement for telephone and telegraph lines and incidental purposes in the document recorded April 25, 1926 as Book 495 of Deeds, Page 30 of Official Records.
6. An easement for pole lines and incidental purposes in the document recorded April 5, 1929 as Book 176, Page 311 of Official Records.
7. An easement for pipe lines, telegraph or telephone lines and incidental purposes in the document recorded January 29, 1930 as Book 226, Page 34 of Official Records.

Document(s) declaring modifications thereof recorded April 9, 1930 as Book 223, Page 380 of Official Records.

8. An easement for pipe lines and telegraph or telephone lines and incidental purposes in the document recorded November 20, 1945 as Book 857, Page 123 and September 7, 1945, Book 824, Page 97 of Official Records.
9. An easement for pole lines, crossarms, anchors and guys and incidental purposes in the document recorded August 12, 1953 as Book 2174, Page 291 of Official Records.

The exact location of said easement is not defined of record.

10. Intentionally deleted
11. Intentionally deleted
12. An easement for pipe lines and incidental purposes in the document recorded September 12, 1983 as Book 11429, Page 72 of Official Records.
13. The following matters shown or disclosed by the filed or recorded map referred to in the legal description:

"Building setback line-no permanent structures shall be constructed within 50 ft.; measured from the Toe of the Creek Bank. The approx. location of the centerline of Sand Creek is shown on the filed Map."

14. An easement shown or dedicated on the Map as referred to in the legal description
For: Limits of Alquist-Priolo Special Study Zone and incidental purposes. and incidental purposes.
15. An easement shown or dedicated on the Map as referred to in the legal description
For: Roadway and incidental purposes.
16. Intentionally deleted
17. Rights of parties in possession.

INFORMATIONAL NOTES

1. Taxes for proration purposes only for the fiscal year 2004-2005 (SECURED).

First Installment: \$5,763.26, PAID
Second Installment: \$5,763.26, PAID
Tax Rate Area: 01-132
APN: 057-050-005-8

2. Taxes for proration purposes only for the fiscal year 2004-2005 (SECURED).

First Installment: \$1,763.93, PAID
Second Installment: \$1,763.93, PAID
Tax Rate Area: 01-132
APN: 057-042-006-7

3. According to the public records, there has been no conveyance of the land within a period of twenty four months prior to the date of this report, except as follows:

A document recorded OCTOBER 25, 2004 as INSTRUMENT NO. 2004408282 of Official Records.

From: MONTE ALBERS AND LUCIA ALBERS, CO-TRUSTEES OF THE MONTE ALBERS AND LUCIA ALBERS TRUST DATED JUNE 4, 1985
To: HILLSIDE GROUP LLC, A CALIFORNIA LIMITED LIABILITY COMPANY

A document recorded NOVEMBER 08, 2004 as INSTRUMENT NO. 2004429047 of Official Records.

From: HILLSIDE GROUP LLC, A CALIFORNIA LIMITED LIABILITY COMPANY
To: MONTE ALBERS AND LUCIA ALBERS, CO-TRUSTEES OF THE MONTE ALBERS AND LUCIA ALBERS TRUST DATED JUNE 4, 1985, AS TO A 20% UNDIVIDED INTEREST

The map attached, if any, may or may not be a survey of the land depicted hereon. First American expressly disclaims any liability for loss or damage which may result from reliance on this map except to the extent coverage for such loss or damage is expressly provided by the terms and provisions of the title insurance policy, if any, to which this map is attached.

LEGAL DESCRIPTION

Real property in the City of Antioch, County of Contra Costa, State of California, described as follows:

Parcel D as shown on the Parcel Map M.S. 55-83, filed May 14, 1985, Book 116 of Parcel Maps, Page 1, Contra Costa County Records.

EXCEPTING THEREFROM:

The parcel of land described in the Deed to John T. Camara, et ux, recorded July 23, 1987, Book 13791, Page 835, Official Records, said Parcel of land being also shown on the Record of Survey Lot Line Adjustment filed June 30, 1987, Book 83 of Licensed Surveyor's Maps, Page 50, Contra Costa County Records.

APN: 057-050-005-8 and 057-042-006-7

NOTICE

Section 12413.1 of the California Insurance Code, effective January 1, 1990, requires that any title insurance company, underwritten title company, or controlled escrow company handling funds in an escrow or sub-escrow capacity, wait a specified number of days after depositing funds, before recording any documents in connection with the transaction or disbursing funds. This statute allows for funds deposited by wire transfer to be disbursed the same day as deposit. In the case of cashier's checks or certified checks, funds may be disbursed the next day after deposit. In order to avoid unnecessary delays of three to seven days, or more, please use wire transfer, cashier's checks, or certified checks whenever possible.

If you have any questions about the effect of this new law, please contact your local First American Office for more details.

**EXHIBIT A
LIST OF PRINTED EXCEPTIONS AND EXCLUSIONS (BY POLICY TYPE)**

**1. CALIFORNIA LAND TITLE ASSOCIATION STANDARD COVERAGE POLICY - 1990
SCHEDULE B**

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records. Proceedings by a public agency which may result in taxes or assessments, or notice of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.
3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the public records.

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
(b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
 - (a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;
 - (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
 - (c) resulting in no loss or damage to the insured claimant;
 - (d) attaching or created subsequent to Date of Policy; or
 - (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage or for the estate or interest insured by this policy.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with applicable "doing business" laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by their policy or the transaction creating the interest of the insured lender, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws.

**2. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY FORM B - 1970
SCHEDULE OF EXCLUSIONS FROM COVERAGE**

1. Any law, ordinance or governmental regulation (including but not limited to building and zoning ordinances) restricting or regulating or prohibiting the occupancy, use or enjoyment of the land, or regulating the character, dimensions or location of any improvement now or hereafter erected on the land, or prohibiting a separation in ownership or a reduction in the dimensions of area of the land, or the effect of any violation of any such law, ordinance or governmental regulation.
2. Rights of eminent domain or governmental rights of police power unless notice of the exercise of such rights appears in the public records at Date of Policy.
3. Defects, liens, encumbrances, adverse claims, or other matters (a) created, suffered, assumed or agreed to by the insured claimant; (b) not known to the Company and not shown by the public records but known to the insured claimant either at Date of Policy or at the date such claimant acquired an estate or interest insured by this policy and not disclosed in writing by the insured claimant to the Company prior to the date such insured claimant became an insured hereunder; (c) resulting in no loss or damage to the insured claimant; (d) attaching or

created subsequent to Date of Policy; or (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.

**3. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY FORM B - 1970
WITH REGIONAL EXCEPTIONS**

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 2 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage by reason of the matters shown in parts one and two following:

Part One

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.

**4. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 1970
WITH A.L.T.A. ENDORSEMENT FORM 1 COVERAGE
SCHEDULE OF EXCLUSIONS FROM COVERAGE**

1. Any law, ordinance or governmental regulation (including but not limited to building and zoning ordinances) restricting or regulating or prohibiting the occupancy, use or enjoyment of the land, or regulating the character, dimensions or location of any improvement now or hereafter erected on the land, or prohibiting a separation in ownership or a reduction in the dimensions or area of the land, or the effect of any violation of any such law ordinance or governmental regulation.
2. Rights of eminent domain or governmental rights of police power unless notice of the exercise of such rights appears in the public records at Date of Policy.
3. Defects, liens, encumbrances, adverse claims, or other matters (a) created, suffered, assumed or agreed to by the insured claimant, (b) not known to the Company and not shown by the public records but known to the insured claimant either at Date of Policy or at the date such claimant acquired an estate or interest insured by this policy or acquired the insured mortgage and not disclosed in writing by the insured claimant to the Company prior to the date such insured claimant became an insured hereunder, (c) resulting in no loss or damage to the insured claimant; (d) attaching or created subsequent to Date of Policy (except to the extent insurance is afforded herein as to any statutory lien for labor or material or to the extent insurance is afforded herein as to assessments for street improvements under construction or completed at Date of Policy).
4. Unenforceability of the lien of the insured mortgage because of failure of the insured at Date of Policy or of any subsequent owner of the indebtedness to comply with applicable "doing business" laws of the state in which the land is situated.

**5. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 1970
WITH REGIONAL EXCEPTIONS**

When the American Land Title Association Lenders Policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy, the exclusions set forth in paragraph 4 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage by reason of the matters shown in parts one and two following:

Part One

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.

**6. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 1992
WITH A.L.T.A. ENDORSEMENT FORM 1 COVERAGE
EXCLUSIONS FROM COVERAGE**

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy;
(b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims, or other matters:
 - (a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;
 - (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
 - (c) resulting in no loss or damage to the insured claimant;
 - (d) attaching or created subsequent to Date of Policy (except to the extent that this policy insures the priority of the lien of the insured mortgage over any statutory lien for services, labor or material or the extent insurance is afforded herein as to assessments for street improvements under construction or completed at date of policy); or
 - (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable "doing business" laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any statutory lien for services, labor or materials (or the claim of priority of any statutory lien for services, labor or materials over the lien of the insured mortgage) arising from an improvement or work related to the land which is contracted for and commenced subsequent to Date of Policy and is not financed in whole or in part by proceeds of the indebtedness secured by the insured mortgage which at Date of Policy the insured has advanced or is obligated to advance.
7. Any claim, which arises out of the transaction creating the interest of the mortgagee insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
 - (i) the transaction creating the interest of the insured mortgagee being deemed a fraudulent conveyance or fraudulent transfer; or
 - (ii) the subordination of the interest of the insured mortgagee as a result of the application of the doctrine of equitable subordination; or
 - (iii) the transaction creating the interest of the insured mortgagee being deemed a preferential transfer except where the preferential transfer results from the failure:
 - (a) to timely record the instrument of transfer; or
 - (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

**7. AMERICAN LAND TITLE ASSOCIATION LOAN POLICY - 1992
WITH REGIONAL EXCEPTIONS**

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 6 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.

8. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY - 1992

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
(b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims, or other matters:
 - (a) created, suffered, assumed or agreed to by the insured claimant;
 - (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
 - (c) resulting in no loss or damage to the insured claimant;
 - (d) attaching or created subsequent to Date of Policy; or
 - (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.
4. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
 - (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
 - (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
 - (a) to timely record the instrument of transfer; or
 - (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

**9. AMERICAN LAND TITLE ASSOCIATION OWNER'S POLICY - 1992
WITH REGIONAL EXCEPTIONS**

When the American Land Title Association policy is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 8 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of: Part One:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.
5. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.

**10. AMERICAN LAND TITLE ASSOCIATION RESIDENTIAL
TITLE INSURANCE POLICY - 1987
EXCLUSIONS**

In addition to the Exceptions in Schedule B, you are not insured against loss, costs, attorneys' fees and expenses resulting from:

1. Governmental police power, and the existence or violation of any law or government regulation. This includes building and zoning ordinances and also laws and regulations concerning:

* land use	* land division
* improvements on the land	* environmental protection

This exclusion does not apply to violations or the enforcement of these matters which appear in the public records at Policy Date. This exclusion does not limit the zoning coverage described in items 12 and 13 of Covered Title Risks.

2. The right to take the land by condemning it, unless:
 - * a notice of exercising the right appears in the public records on the Policy Date
 - * the taking happened prior to the Policy Date and is binding on you if you bought the land without knowing of the taking.
3. Title Risks:
 - * that are created, allowed, or agreed to by you
 - * that are known to you, but not to us, on the Policy Date - unless they appeared in the public records
 - * that result in no loss to you
 - * that first affect your title after the Policy Date - this does not limit the labor and material lien coverage in Item 8 of Covered Title Risks
4. Failure to pay value for your title.
5. Lack of a right:
 - * to any land outside the area specifically described and referred to in Item 3 of Schedule A, or
 - * in streets, alleys, or waterways that touch your landThis exclusion does not limit the access coverage in Item 5 of Covered Title Risks.

11. EAGLE PROTECTION OWNER'S POLICY

CLTA HOMEOWNER'S POLICY OF TITLE INSURANCE - 1998

ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE - 1998

Covered Risks 14 (Subdivision Law Violation), 15 (Building Permit), 16 (Zoning) and 18 (Encroachment of boundary walls or fences) are subject to Deductible Amounts and Maximum Dollar Limits of Liability

EXCLUSIONS

In addition to the Exceptions in Schedule B, you are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of any law or government regulation. This includes ordinances, laws and regulations concerning:

a. building	b. zoning
c. land use	d. improvements on the land
e. land division	f. environmental protection

This exclusion does not apply to violations or the enforcement of these matters if notice of the violation or enforcement appears in the Public Records at the Policy Date.
This exclusion does not limit the coverage described in Covered Risk 14, 15, 16, 17 or 24.
2. The failure of Your existing structures, or any part of them, to be constructed in accordance with applicable building codes. This Exclusion does not apply to violations of building codes if notice of the violation appears in the Public Records at the Policy Date.
3. The right to take the Land by condemning it, unless:
 - a. a notice of exercising the right appears in the Public Records at the Policy Date; or
 - b. the taking happened before the Policy Date and is binding on You if You bought the Land without Knowing of the taking.
4. Risks:
 - a. that are created, allowed, or agreed to by You, whether or not they appear in the Public Records;
 - b. that are Known to You at the Policy Date, but not to Us, unless they appear in the Public Records at the Policy Date;
 - c. that result in no loss to You; or
 - d. that first occur after the Policy Date - this does not limit the coverage described in Covered Risk 7, 8.d, 22, 23, 24 or 25.
5. Failure to pay value for Your Title.
6. Lack of a right:
 - a. to any Land outside the area specifically described and referred to in paragraph 3 of Schedule A; and
 - b. in streets, alleys, or waterways that touch the Land.This exclusion does not limit the coverage described in Covered Risk 11 or 18.

12. SECOND GENERATION EAGLE LOAN POLICY AMERICAN LAND TITLE ASSOCIATION EXPANDED COVERAGE RESIDENTIAL LOAN POLICY (10/13/01)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the Land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the Land; (iii) a separation in ownership or a change in the dimensions or area of the Land or any parcel of which the Land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the Land has been recorded in the Public Records at Date of Policy. This exclusion does not limit the coverage provided under Covered Risks 12, 13, 14 and 16 of this policy.
(b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the Public Records at Date of Policy. This exclusion does not limit the coverage provided under Covered Risks 12, 13, 14 and 16 of this policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the Public Records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without Knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
 - (a) created, suffered, assumed or agreed to by the Insured Claimant;
 - (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
 - (c) resulting in no loss or damage to the Insured Claimant;
 - (d) attaching or created subsequent to Date of Policy (this paragraph does not limit the coverage provided under Covered Risks 8, 16, 18, 19, 20, 21, 22, 23, 24, 25 and 26); or
 - (e) resulting in loss or damage which would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of the Insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with applicable doing business laws of the state in which the Land is situated.
5. Invalidity or unenforceability of the lien of the Insured Mortgage, or claim thereof, which arises out of the transaction evidenced by the Insured Mortgage and is based upon usury, except as provided in Covered Risk 27, or any consumer credit protection or truth in lending law.
6. Real property taxes or assessments of any governmental authority which become a lien on the Land subsequent to Date of Policy. This exclusion does not limit the coverage provided under Covered Risks 7, 8 (e) and 26.
7. Any claim of invalidity, unenforceability or lack of priority of the lien of the Insured Mortgage as to advances or modifications made after the Insured has Knowledge that the vestee shown in Schedule A is no longer the owner of the estate or interest covered by this policy. This exclusion does not limit the coverage provided in Covered Risk 8.
8. Lack of priority of the lien of the Insured Mortgage as to each and every advance made after Date of Policy, and all interest charged thereon, over liens, encumbrances and other matters affecting title, the existence of which are Known to the Insured at:
 - (a) The time of the advance; or
 - (b) The time a modification is made to the terms of the Insured Mortgage which changes the rate of interest charged, if the rate of interest is greater as a result of the modification than it would have been before the modification.
 This exclusion does not limit the coverage provided in Covered Risk 8.
9. The failure of the residential structure, or any portion thereof to have been constructed before, on or after Date of Policy in accordance with applicable building codes. This exclusion does not apply to violations of building codes if notice of the violation appears in the Public Records at Date of Policy.

SCHEDULE B

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. The following existing statutes, reference to which are made part of the ALTA 8.1 Environmental Protection Lien Endorsement incorporated into this Policy following item 28 of Covered Risks: NONE.

13. SECOND GENERATION EAGLE LOAN POLICY AMERICAN LAND TITLE ASSOCIATION EXPANDED COVERAGE RESIDENTIAL LOAN POLICY (10/13/01) WITH REGIONAL EXCEPTIONS

When the American Land Title Association loan policy with EAGLE Protection Added is used as a Standard Coverage Policy and not as an Extended Coverage Policy the exclusions set forth in paragraph 12 above are used and the following exceptions to coverage appear in the policy.

SCHEDULE B

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:
Part One:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession thereof.
3. Easements, claims of easement or encumbrances which are not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by public records.

5. Unpatented mining claims; reservations or exceptions in patents or in acts authorizing the issuance thereof; water rights, claims or title to water.
6. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.

Part Two:

1. The following existing statutes, reference to which are made part of the ALTA 8.1 Environmental Protection Lien Endorsement incorporated into this Policy following item 28 of Covered Risks: None.

PRIVACY POLICY

We Are Committed to Safeguarding Customer Information

In order to better serve your needs now and in the future, we may ask you to provide us with certain information. We understand that you may be concerned about what we will do with such information – particularly any personal or financial information. We agree that you have a right to know how we will utilize the personal information you provide to us. Therefore, together with our parent company, The First American Corporation, we have adopted this Privacy Policy to govern the use and handling of your personal information.

Applicability

This Privacy Policy governs our use of the information which you provide to us. It does not govern the manner in which we may use information we have obtained from any other source, such as information obtained from a public record or from another person or entity. First American has also adopted broader guidelines that govern our use of personal information regardless of its source. First American calls these guidelines its *Fair Information Values*, a copy of which can be found on our website at www.firstam.com.

Types of Information

Depending upon which of our services you are utilizing, the types of nonpublic personal information that we may collect include:

- Information we receive from you on applications, forms and in other communications to us, whether in writing, in person, by telephone or any other means;
- Information about your transactions with us, our affiliated companies, or others; and
- Information we receive from a consumer reporting agency.

Use of Information

We request information from you for our own legitimate business purposes and not for the benefit of any nonaffiliated party. Therefore, we will not release your information to nonaffiliated parties except: (1) as necessary for us to provide the product or service you have requested of us; or (2) as permitted by law. We may, however, store such information indefinitely, including the period after which any customer relationship has ceased. Such information may be used for any internal purpose, such as quality control efforts or customer analysis. We may also provide all of the types of nonpublic personal information listed above to one or more of our affiliated companies. Such affiliated companies include financial service providers, such as title insurers, property and casualty insurers, and trust and investment advisory companies, or companies involved in real estate services, such as appraisal companies, home warranty companies, and escrow companies. Furthermore, we may also provide all the information we collect, as described above, to companies that perform marketing services on our behalf, on behalf of our affiliated companies, or to other financial institutions with whom we or our affiliated companies have joint marketing agreements.

Former Customers

Even if you are no longer our customer, our Privacy Policy will continue to apply to you.

Confidentiality and Security

We will use our best efforts to ensure that no unauthorized parties have access to any of your information. We restrict access to nonpublic personal information about you to those individuals and entities who need to know that information to provide products or services to you. We will use our best efforts to train and oversee our employees and agents to ensure that your information will be handled responsibly and in accordance with this Privacy Policy and First American's *Fair Information Values*. We currently maintain physical, electronic, and procedural safeguards that comply with federal regulations to guard your nonpublic personal information.

APPENDIX C

Environmental Site Assessment Questionnaire

DRAFT

ENGEO

INCORPORATED

2010 Crow Canyon Place

Suite 250

San Ramon, CA 94583

(925) 866-9000

Fax (925) 866-0199

Attn: Kelsey Adams

ENVIRONMENTAL SITE ASSESSMENT QUESTIONNAIRE

To evaluate the potential for environmentally related concerns associated with the property in question, we require the following information prior to the site walkover. In most cases, this information is crucial to the formulation of a competent site assessment plan so your prompt cooperation is appreciated.

1. Contact person at law, lending or insurance firm and telephone number.

N/A

2. Contact person at property in question (if appropriate) and telephone number. Is there a local contractor we should contact?

Grant Gibson (CBG) 925-866-6322

3. Present property owner, date of acquisition, deed number and those known to be in the chain of title. Is a chain-of-title available? If so, from whom?

Lucia Albers

4. Property acreage and lot numbers (if appropriate), including tax map identification.

104 ac.

5. Are site plans, as-builts, or other property maps available? If so, from whom?

Grant Gibson (CBG) 925-866-6322

6. Present use of property and intended use.

Fallow

7. Knowledge of past use of property.

Fallow

INFORMATION NEEDS RELATIVE TO SITE ASSESSMENTS (continued)

8. Neighboring property uses.

		Owner	
9. Is the <i>property</i> or any <i>adjoining property</i> used for an industrial use?	Yes	No	Unk
10. To the best of your knowledge, has the <i>property</i> or any <i>adjoining property</i> been used for an industrial use in the past?	Yes	No	Unk
11. Is the <i>property</i> or any <i>adjoining property</i> used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	Yes	No	Unk
12. To the best of your knowledge has the <i>property</i> or any <i>adjoining property</i> been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	Yes	No	Unk
13. Are there currently, or to the best of your knowledge have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal in volume or 50 gal in the aggregate, stored on or used at the <i>property</i> or at the facility?	Yes	No	Unk
14. Are there currently, or to the best of your knowledge have been previously, any industrial <i>drums</i> (typically 55 gal) or sacks of chemicals located on the property or at the facility?	Yes	No	Unk
15. Has <i>fill dirt</i> been brought onto the property that originated from a contaminated site or that is of an unknown origin?	Yes	No	Unk
16. Are there currently, or to the best of you knowledge have there been previously, any <i>pits, ponds, or lagoons</i> located on the <i>property</i> in connection with waste treatment or waste disposal?	Yes	No	Unk
17. Is there currently, or to the best of your knowledge has there been previously, any stained soil on the <i>property</i> ?	Yes	No	Unk
18. Are there currently, or to the best of your knowledge have there been previously, any registered or unregistered storage tanks (above or underground) located on the <i>property</i> ?	Yes	No	Unk
19. Are there currently, or to the best of your knowledge have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the <i>property</i> or adjacent to any structure located on the <i>property</i> ?	Yes	No	Unk
20. Are there currently, or to the best of your knowledge have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting foul odors?	Yes	No	Unk
21. Are there any domestic, irrigation or monitoring wells on the property?	Yes	No	Unk
22. If the <i>property</i> is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental/health agency?	Yes	No	Unk
23. Does the <i>owner</i> or <i>occupant</i> of the <i>property</i> have any knowledge of <i>environmental liens</i> or governmental notification relating to past or	Yes	No	Unk

Owner

recurrent violations of environmental laws with respect to the *property* or any facility located on the *property*?

24. Has the *owner* or *occupant* of the *property* been informed of the past or current existence of *hazardous substances* or *petroleum products* or environmental violations with respect to the *property* or any facility located on the *property*? Yes No Unk

25. Does the *owner* or *occupant* of the *property* have any knowledge of any *environmental site assessment* of the *property* or facility that indicated the presence of *hazardous substances* or *petroleum products* on, or contamination of, the *property* or recommended further assessment of the *property*? Yes No Unk

26. Does the *owner* or *occupant* of the *property* know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any *hazardous substance* or *petroleum products* involving the *property* by any owner or occupant of the *property*? Yes No Unk

27. Is there an active or abandoned on-site septic system in place? Yes No Unk

28. Does the *property* discharge waste water on or adjacent to the *property* other than storm water into a sanitary sewer system? Yes No Unk

29. To the best of your knowledge, have any *hazardous substances* or *petroleum products*, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the *property*? Yes No Unk

30. Is there a transformer, capacitor, or any hydraulic equipment for which there are any records indicating the presence of PCBs? Yes No Unk

¹Unk="unknown" or "no response"

Preparer Name: John Buller

Company: Centex Homes

Title: Land Development Manager

Date: June 29, 2005

APPENDIX D

PRELIMINARY STORMWATER CONTROL PLAN

Preliminary Stormwater Control Plan

ALBERS PROPERTY Subdivision 9515 CITY OF ANTIOCH, CALIFORNIA



Dated: April 26, 2021
1ST Submittal

Prepared For:
Monte Albers and Lucia Albers Trust & Elizabeth Ann Iannaccone Living Trust

Prepared By:



2633 CAMINO RAMON, SUITE 350 • SAN RAMON, CALIFORNIA 94583 • (925) 866-0322 • www.cbandg.com

SAN RAMON • SACRAMENTO

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Appendix F: Detention Basin Detail
Appendix G: Bioretention Area Detail

I. PROJECT DATA

Table 1. Project Data

Project Name/Number	Albers Property (Subdivision 9515)
Application Submittal Date	May 23, 2019
Project Location	Deer Valley Road, Antioch CA 94513
Name of Developer	Monte Albers and Lucia Albers Trust & Elizabeth Ann Iannaccone Living Trust
Project Phase No.	NA
Project Type and Description	301 single-family homes with neighborhood park and future development areas
Project Watershed	Sand Creek draining to Marsh Creek
Total Project Site Area (acres)	96.5 Acres
Total Area of Land Disturbed (acres)	57.8 Acres
Total New Impervious Surface Area (sq. ft.)	34.0 Acres
Total Replaced Impervious Surface Area	0.0 Acres
Total Pre-Project Impervious Surface Area	0.0 Acres
Total Post-Project Impervious Surface Area	34.0 Acres
50% Rule	Applies
Project Density (Gross)	301 DU/96.5 Acres = 3.1 DU/Acre
Applicable Special Project Categories	None
Percent LID and non-LID treatment	100% LID
HMP Compliance	Applies

II. SETTING

II.A. Project Location and Description

The 57.8-acre Albers Property Project (“Project”) is located within a property containing roughly 96.5 acres in the City of Antioch, Contra Costa County. The property is located east of Deer Valley Road, West of Highway 4, as shown in Appendix A – Vicinity Map. The project is bordered by Deer Valley Road to the West, Contra Costa County Flood Control District (CCCFCD) to the North, Future Creekside Development (Subdivision 9501) to the East, and open space to the South. An aerial view of the surrounding area is shown as Appendix B – Site Aerial.

The project will include no more than 301 single family homes, private roadways, sidewalk, landscape, and nature trails on approximately 57.8 acres. Roughly 38.7 Acres surrounding the project will remain as open space.

II.B. Existing Site Features and Conditions

The existing site is located on a vacant parcel. The project is an undeveloped open space, consisting almost exclusively of undisturbed dirt with sparse grasses and trees along Sand Creek. Immediately to the north of the project is a CCCFCD basin, which is planned to be a future recreational area, and a vacant Antioch Unified School District parcel. To the south and east are parcels planned for future development and to the west is Deer Valley Road. The pre-project conditions can be found in Appendix C – Pre-Project Conditions.

The Albers Project is located between two knolls. Elevations on the site range from approximately 324 feet at the top of the western knoll, to 175 feet at the southeastern corner of the project. Sand Creek cuts through the project along the western edge, well away from the disturbed project area. About 1/3 of the project drains west towards Sand Creek, while the remaining area drains east towards a valley which eventually finds its way to the watercourse east of the planned Creekside Project. Annual rainfall onsite is approximately 14 inches, per the Contra Costa County Flood Control and Water Conservation District’s Mean Seasonal Isohyets Map as shown in Appendix D.

II.C. Opportunities and Constraints for Stormwater Control

Opportunities

- Low Areas - The proposed project grading provides an opportunity to connect to the proposed Creekside Project with the low point being the southeastern corner of the project. This is the entry into the project and storm drain outfall point of connection.
- Significant Elevation Change – The elevation change across the site is nearly 150 feet which provides flexibility in storm drain layout and design.

Constraints

- *Significant Elevation Change* – The site has significant grading, and conform difficulties which forces all drainage to be handled in one location, rather than being dispersed throughout the site in landscaped areas or multiple bioretention basins.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

III.A.1. Limitation of Development Envelope

The proposed project will impact 60% of the 96.5-acre project site. The remaining site will remain as undisturbed open space. In addition, approximately 1-2 acres of the project site will be a park area with minimal impervious areas.

III.A.2. Preservation of Natural Drainage Features

No natural drainage features will be impacted as a part of this project.

III.A.3. Setbacks from Creeks, Wetlands and Riparian Habitats

As mentioned previously, Sand Creek (being the only natural drainage feature on or adjacent to the project) will remain undisturbed.

III.A.4. Minimization of Imperviousness

Imperviousness was limited by clustering development and limiting the overall development envelope.

III.A.5. Use of Drainage as a Design Element

The project was planned with water quality treatment goals at the forefront. Every effort was made to minimize impervious surfaces and direct runoff to less pervious surfaces. The detention basin is to be incorporated into the park design as a usable recreational amenity for the community to utilize as an open space area.

III.A.6. Use of Permeable Pavements

The project is not incorporating permeable pavers, due to the low infiltration capacity of on-site soils.

III.B. Dispersal of Runoff to Pervious Areas

The low infiltration capacity of on-site soils makes using pervious areas not viable as an opportunity for dispersal of runoff.

III.C. Feasibility Assessment of Harvesting and Use for Treatment and Flow-Control

III.C.1. Permeability of Site Soils

The Stormwater C.3 Guidebook set a minimum permeability threshold of 1.6 inch/hour. The project’s soil permeability is below the given threshold, which limits the use of any IMPs that require infiltration as a basis for stormwater management.

III.C.2. Potential Opportunities for Harvesting and Use

Based on site density and the land plan, it is infeasible to store and distribute rainwater collection from the roofs for reuse.

III.C.3. Harvesting and Use Feasibility Calculations

Table 2. Harvesting and Use Feasibility

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>
<i>Impervious Area Description</i>	<i>Square feet of Impervious Surface</i>	<i>Acres of Impervious Surface</i>	<i>Uses and User Units</i>	<i>Toilet and Urinal Water Usage (gal/day)</i>	<i>Water Use per Acre (gal/day/acre)</i>	<i>Required demand (gal/day/acre).</i>	<i>Is Projected Use > Required Demand? (Column F > Column G?)</i>	<i>Can runoff be piped to an irrigated area 2.5x the impervious area (Column B)?</i>	<i>Is there any other consistent, reliable demand for the quantity in Column G?</i>
Residential Development	1,479,000± SF	34.0±	301 Units (2.8 User Units)	2,500	73.5	4,200	No	No	No

III.C.4. Integrated Management Practices

To meet the requirements of Stormwater Treatment laid out by the C.3 Requirements, the project will use a combination of detention and bioretention to meter and treat the on-site runoff. In order to treat the on-site runoff, the site has been divided into seven drainage management areas. The post project conditions can be found in Appendix E – Post-Project Conditions.

Bioretention treatment areas are designed to filter pollutants from stormwater runoff from adjacent roofs, streets and landscape areas using a combination of vegetation, ponding, permeable planting soil, and a subdrain system. Bioretention treatment areas, which will receive runoff through roof downspouts, local area drain systems, and storm drain systems, will be located at two different locations on the site, ultimately finding their way to natural watercourses in the area.

Bioretention treatment areas will be sized to maximize treatment for tributary areas. Runoff that is directed into the bioretention areas will infiltrate through a minimum of 18” of biotreatment soil (as identified in Attachment L of the Municipal Regional Permit). The treatment soil and the planting material to be used within the bioretention treatment areas must have in filtration rate of 5 inches per hour to meet the minimum infiltration criteria.

Each bioretention area is equipped with an overflow structure that will direct excess water directly into the drainage system. In all cases, the opening of the overflow pipe will be set to meet the minimum ponding depth requirements for each bioretention area. Sizing of IMP 1 is per the “cistern + bioretention” sizing criteria, and sizing of IMP 2 is per the “bioretention” sizing criteria.

IV. DOCUMENTATION OF DRAINAGE DESIGN

IV.A. Descriptions of each Drainage Management Area

Table 3. Table of Drainage Management Areas

<i>DMA Name</i>	<i>Surface Type</i>	<i>Area (square feet)</i>
<i>DMA 1I</i>	<i>Concrete or Asphalt</i>	<i>1,479,000</i>
<i>DMA 1P</i>	<i>Landscape</i>	<i>632,200</i>
<i>DMA 2</i>	<i>Concrete or Asphalt</i>	<i>23,900</i>
<i>DMA 3</i>	<i>Landscape</i>	<i>736,100</i>
<i>DMA 4</i>	<i>Landscape</i>	<i>87,100</i>
<i>DMA 5</i>	<i>Landscape</i>	<i>309,200</i>
<i>DMA 6</i>	<i>Landscape</i>	<i>200,300</i>
<i>DMA 7</i>	<i>Landscape</i>	<i>731,800</i>

DMA 1I, totaling 1,479,000 square feet, drains the impervious surfaces located in DMA 1. DMA 1I drains to the detention basin component of IMP 1, which is located in the southeast corner of the project.

DMA 1P, totaling 632,200 square feet, drains the pervious surfaces located in DMA 1. DMA 1P drains to the detention basin component of IMP 1, which is located in the southeast corner of the project.

DMA 2, totaling 23,900 square feet, drains the impervious emergency vehicle access road located in DMA 2. DMA 2 drains to IMP 2, a bioretention basin located in the southwest corner of the project, east of Sand Creek.

DMA 3, totaling 736,100 square feet, drains undisturbed open space. DMA 3 drains to Sand Creek and is undisturbed by the development.

DMA 4, totaling 87,100 square feet, drains undisturbed open space. DMA 4 drains to the CCCFCD flood control basin and is undisturbed by the development.

DMA 5, totaling 309,200 square feet, drains undisturbed open space. DMA 5 drains to a clean water storm drain system and is conveyed offsite to the natural watercourse east of the Creekside Project.

DMA 6, totaling 200,300 square feet, drains undisturbed open space. DMA 6 drains to a clean water storm drain system and is conveyed offsite to the natural watercourse east of the Creekside Project.

DMA 7, totaling 731,800 square feet, drains undisturbed open space. DMA 7 drains to a clean water storm drain system and is conveyed offsite to the natural watercourse east of the Creekside Project.

IV.B. Tabulation and Sizing Calculations

IV.B.1. Information Summary for IMP Design

Total Project Area (Square Feet)	4,203,500
Mean Annual Precipitation	14 inches
IMPs Designed For:	Treatment + Flow Control

IV.B.2. Self-Treating Areas

Table 4. Self-Treating Areas

<i>DMA Name</i>	<i>Area (square feet)</i>
<i>DMA 3</i>	<i>736,100</i>
<i>DMA 4</i>	<i>87,100</i>
<i>DMA 5</i>	<i>309,200</i>
<i>DMA 6</i>	<i>200,300</i>
<i>DMA 7</i>	<i>731,800</i>

IV.B.3. Self-Retaining Areas

This project does not use self-retaining areas as part of the stormwater management strategy.

IV.B.6. Areas Draining to Non-LID Treatment

This project does not use Non-LID Treatment measures as part of the stormwater management strategy.

V. SOURCE CONTROL MEASURES

V.A.1. Site activities and Potential Sources of Pollutants

Control of pollutant sources limits the release of pollutants into the stormwater system and serves an important early role in reducing urban pollutants. This single-family residential project has the following potential sources of stormwater pollutants:

- Dumping into storm drain inlets
- Need for future indoor & structural pest control
- Landscape/Outdoor pesticide use
- Vehicle and Equipment Cleaning and Repair
- Plazas, sidewalks and parking lots

V.A.2. Source Control Table

<i>Potential source of runoff pollutants</i>	<i>Permanent source control BMPs</i>	<i>Operational source control BMPs</i>
On-site Storm Drain Inlets	Mark all inlets with the words “No Dumping! Flows to Bay”	Inlet markings will be inspected annually and replaced or renewed as needed.
Need for future indoor & structural pest control	Building design features will discourage entry of pests	Integrated Pest Management information to be provided to owners, lessees and operators.
Landscape/Outdoor pesticide use	Native trees, shrubs, and ground cover will be preserved to the maximum extent possible. Landscaping will be designed to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. Where possible, pest-resistant plants will be used adjacent to hardscape. Plants will be selected appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, use of recycled water, and plant interactions.	All site landscaping is to be maintained by a professional landscaping contractor. Contract to state that landscaping is to be maintained using Integrated Pest Management (IPM) principles, with minimal or no use of pesticides.
Vehicle and Equipment Cleaning and Repair	Discourage on-site car washing and vehicle repair.	No persons shall dispose of, nor permit the disposal of vehicle fluids, hazardous materials or rinse water from parts cleaning into storm drains.
Plazas, sidewalks, and parking lots		Sweep plazas, sidewalks and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect wash water containing any cleaning agent or degreaser and discharge to the sanitary sewer not to the storm drain.

VI. STORMWATER FACILITY MAINTENANCE

VI.A.1. Ownership and Responsibility for Maintenance in Perpetuity

The stormwater management facilities identified in this stormwater control plan will be owned and maintained by the future homeowner's association. The property owner will be subject to an annual fee (set by the City's standard fee schedule) to offset the cost of inspecting the site or verifying that the stormwater management facilities are being maintained. A comprehensive Operations and Maintenance plan will be provided with approval of the project improvement plans.

VI.A.2. Certifications

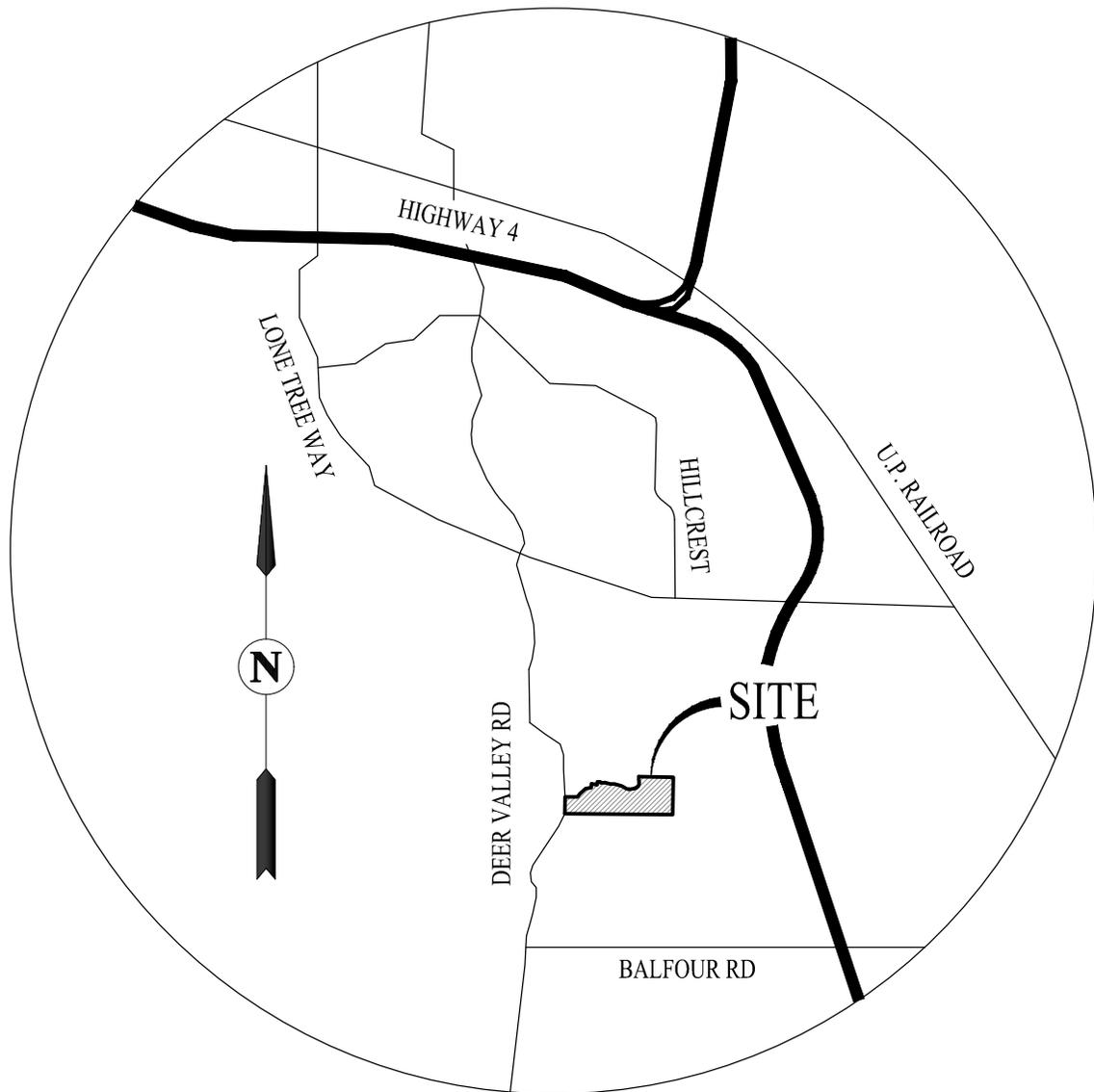
The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2009-0074 and Order R2-2011-0083.

Jason D. Vogan, P.E.

RCE #59299

Date

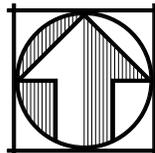
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APPENDIX A VICINITY MAP ALBERS PROPERTY

CITY OF ANTIOCH CONTRA COSTA COUNTY CALIFORNIA

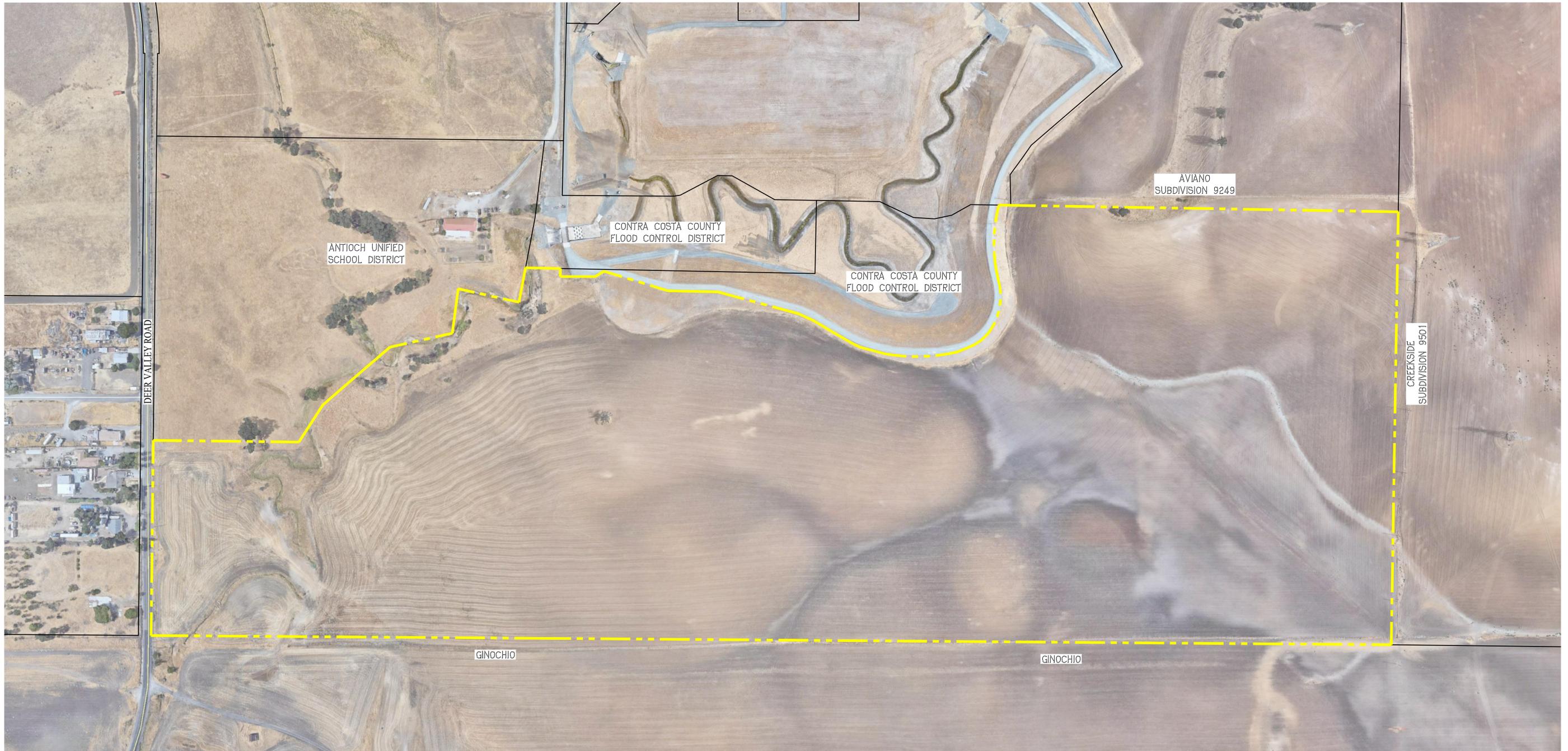
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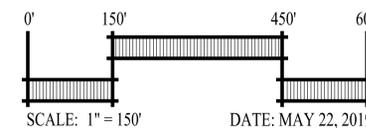
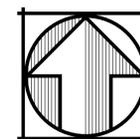
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APPENDIX B
 SITE AERIAL
 ALBERS PROPERTY

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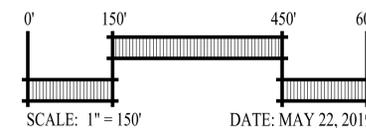


LEGEND

-  PROJECT BOUNDARY
-  PERVIOUS AREA - 96.5 AC (100% TOTAL AREA)

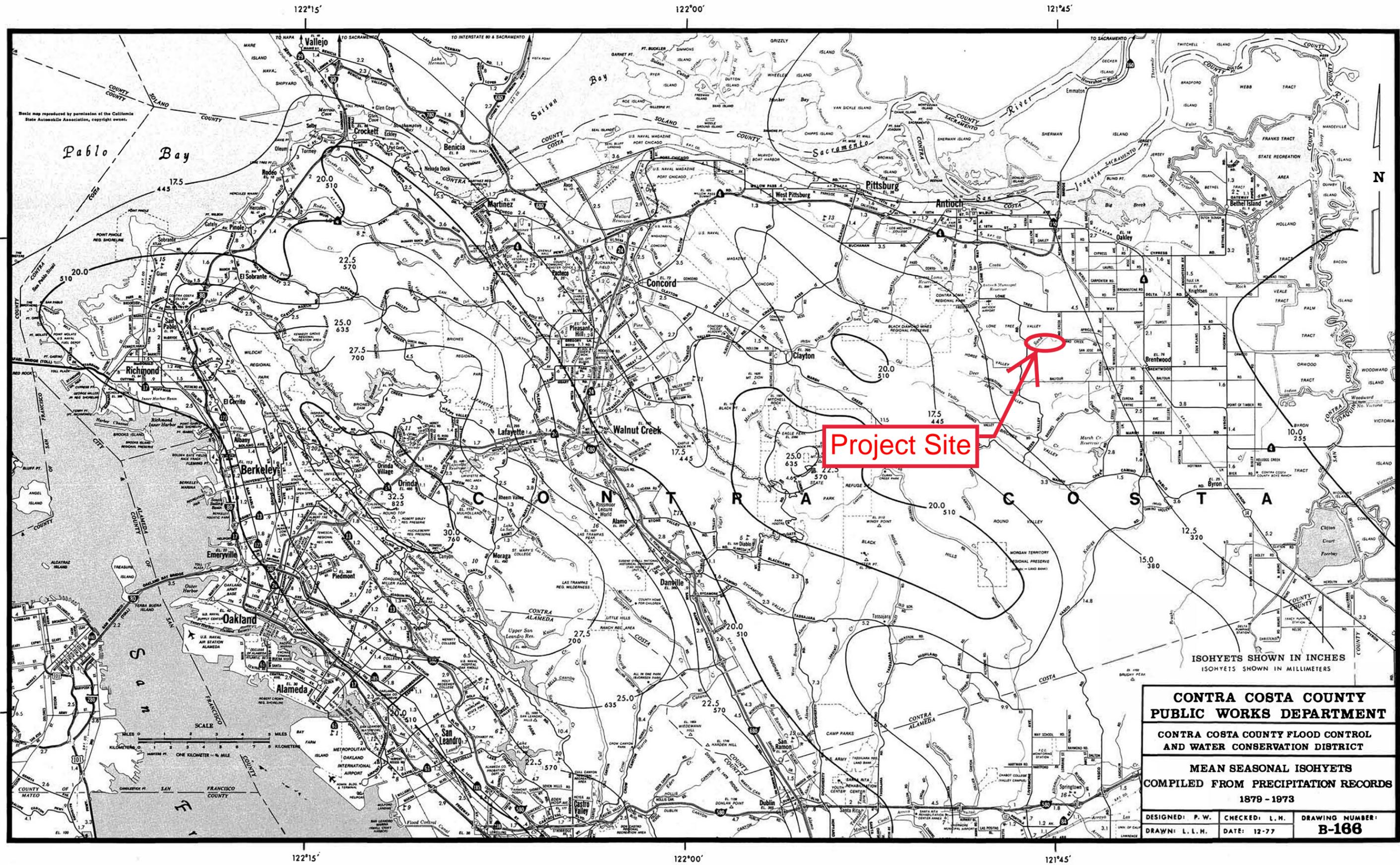
APPENDIX C
PRE-PROJECT CONDITIONS
 ALBERS PROPERTY

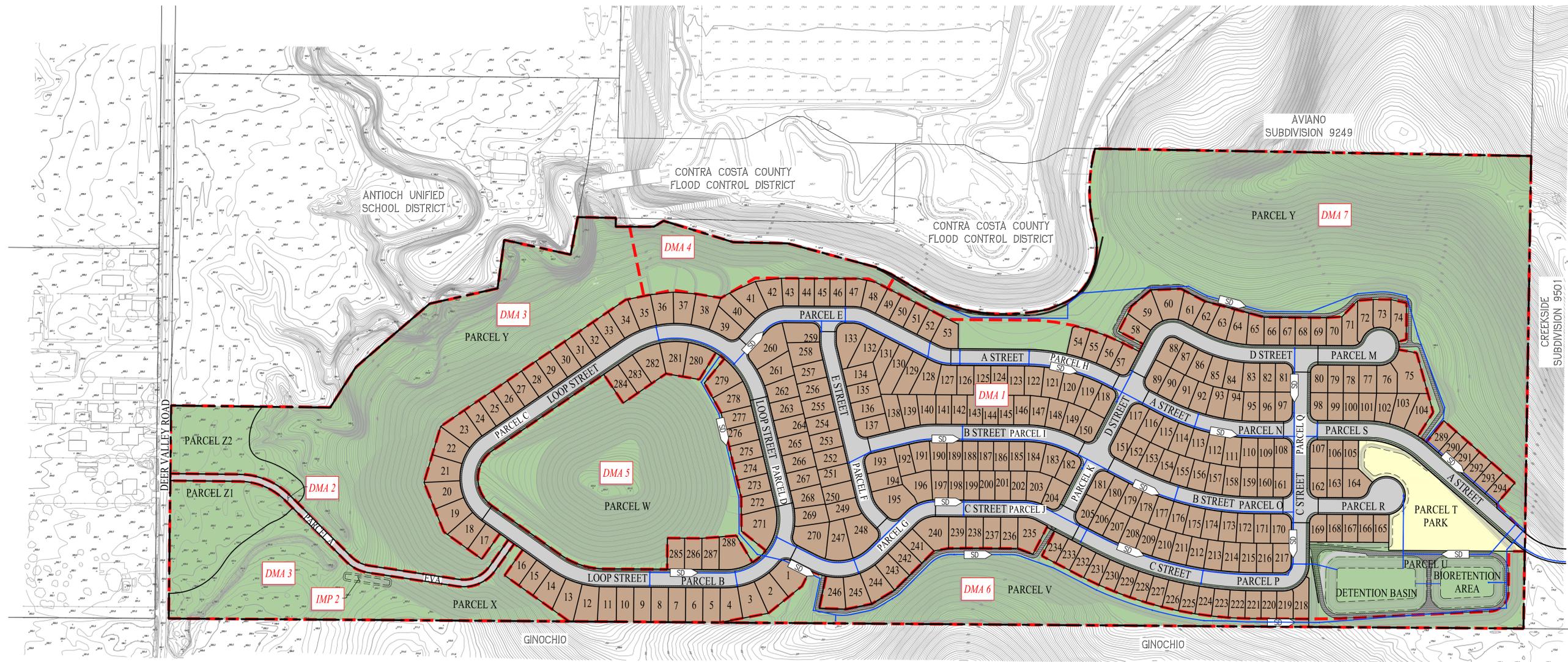
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APPENDIX D





LEGEND

PROPOSED	DESCRIPTION
	SUBDIVISION BOUNDARY
	LOT LINE
	RIGHT OF WAY
	CURB & SIDEWALK
	BIORETENTION AREA
	STORM DRAIN
	DMA BOUNDARY
	FIELD INLET
	MANHOLE
	IMPERVIOUS AREA
	PERVIOUS AREA
	LOTS
	OPTIONAL PARK/FUTURE DEVELOPMENT AREA
	DRAINAGE MANAGEMENT AREA

PERVIOUS/IMPERVIOUS AREAS					DETENTION REQUIRED (CY)	DETENTION PROVIDED (CY)	BIORETENTION REQUIRED (SF)	BIORETENTION PROVIDED (SF)	PONDING (IN)
AREA ID	PER (SF)	PER (%)	IMP (SF)	IMP (%)	TOTAL (SF)				
DMA 1	712,500	33.7%	1,398,700	66.3%	2,111,200	231,335	235,000	13,860	13,900
DMA 2	0	0.0%	23,900	100.0%	23,900	---	---	1,760	1,800
TOTAL	712,500	33.4%	1,422,600	66.6%	2,135,100	231,335	235,000	15,620	15,700

SELF TREATING DMA SUMMARY	
AREA ID	AREA (AC)
DMA 3	16.9
DMA 4	2.0
DMA 5	7.1
DMA 6	4.6
DMA 7	16.8
TOTAL	47.4

APPENDIX E POST-PROJECT CONDITIONS ALBERS PROPERTY

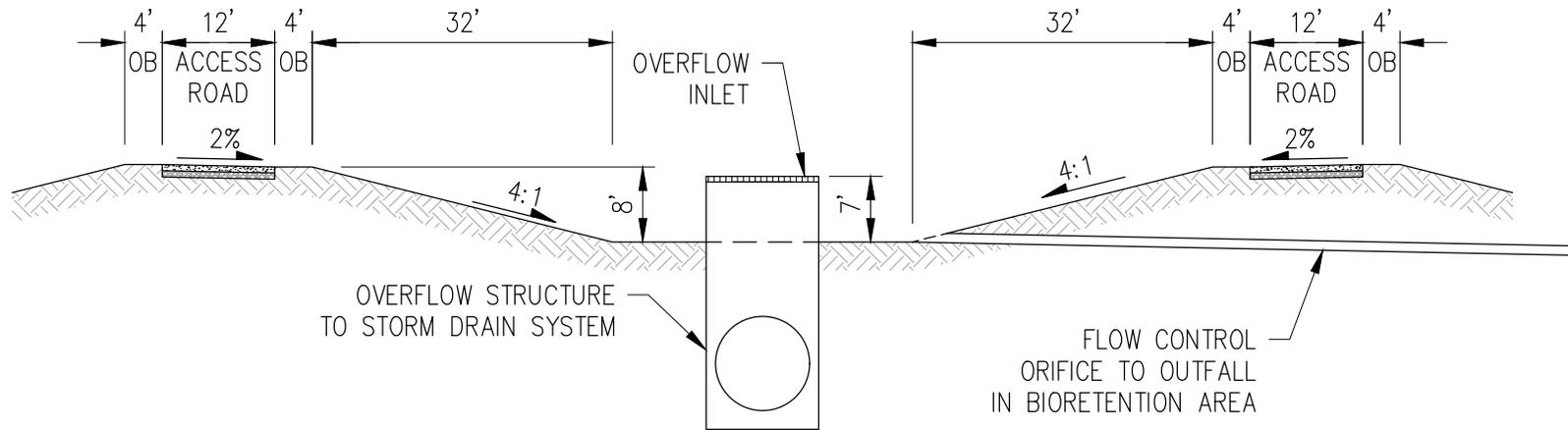
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SCALE: 1" = 150'

DATE: APRIL 26, 2021

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APPENDIX F DETENTION BASIN DETAIL

ALBERS PROPERTY

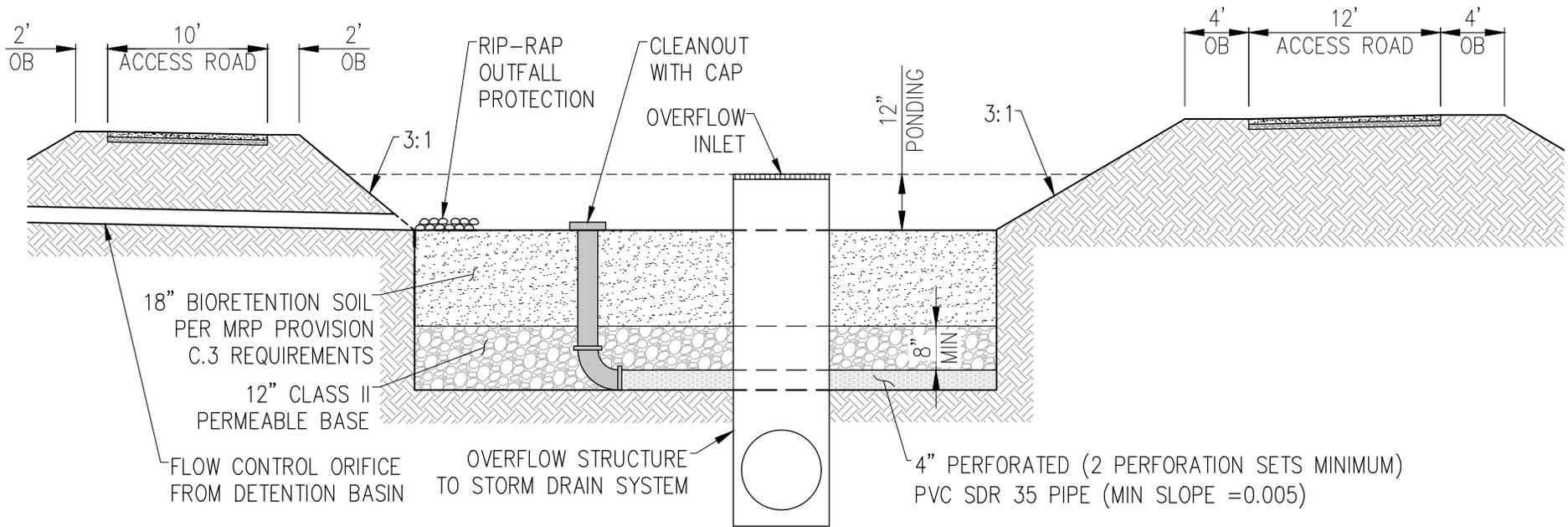
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APPENDIX G
**BIORETENTION
 AREA DETAIL**
 ALBERS PROPERTY

CITY OF ANTIOCH CONTRA COSTA COUNTY CALIFORNIA

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APPENDIX E

ENVIRONMENTAL NOISE ASSESSMENT



Environmental Noise Assessment

Albers Ranch Project

City of Antioch, California

June 22, 2021

Project #210503

Prepared for:



Raney Planning and Management

1501 Sports Drive, Suite A
Sacramento, CA 95834

Prepared by:

Saxelby Acoustics LLC

A blue ink signature of Luke Saxelby.



Luke Saxelby, INCE Bd. Cert.

Principal Consultant

Board Certified, Institute of Noise Control Engineering (INCE)

(916) 760-8821
www.SaxNoise.com | Luke@SaxNoise.com
915 Highland Pointe Drive, Suite 250
Roseville, CA 95678

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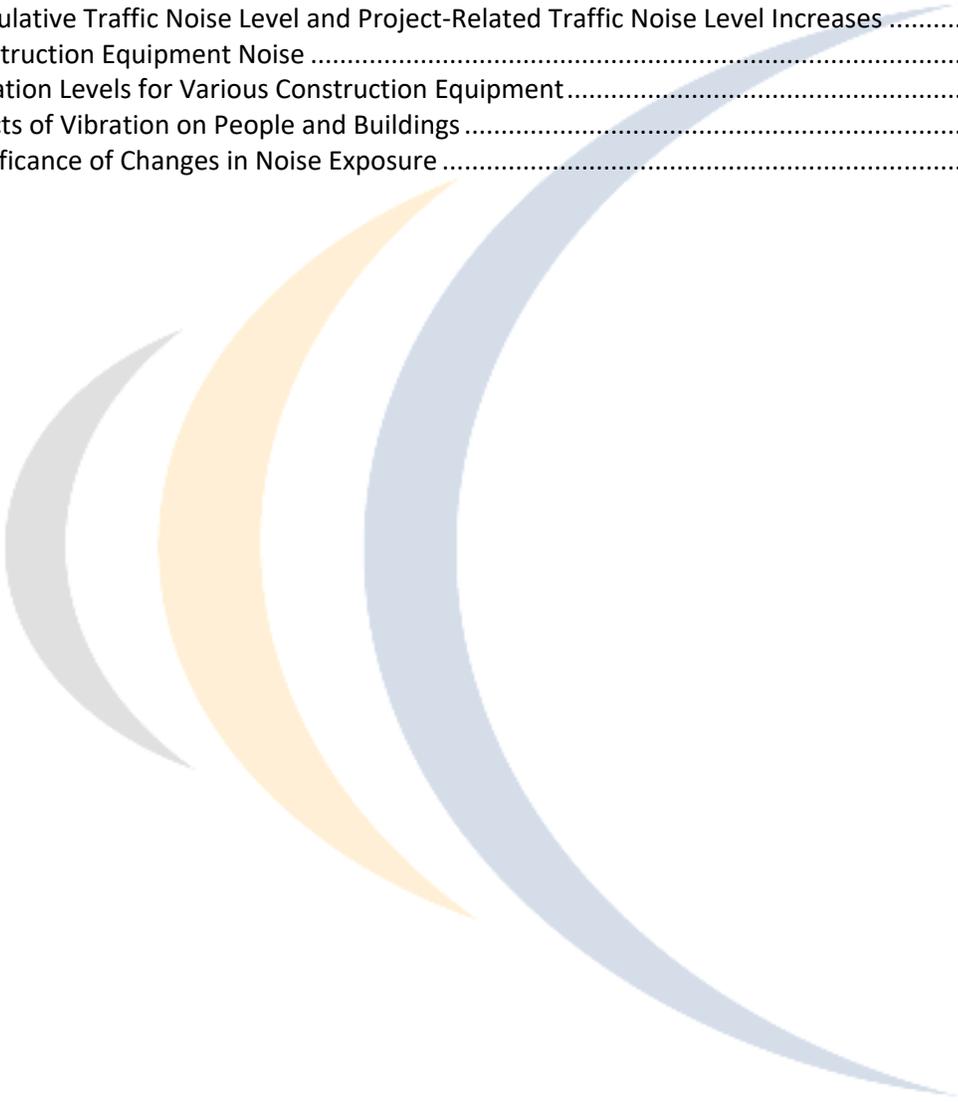
- Appendix A: Acoustical Terminology
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INTRODUCTION

The Albers Ranch project consists of the development of up to 300 single-family home subdivision on a 96.5-acre lot. The project could also include an approximately 150-bed assisted living facility or commercial use. The proposed homes will be located approximately 730 feet from the centerline of Deer Valley Road. The project is located east of Deer Valley Road, South of Prewett Ranch Road, and West of Hillcrest Avenue in the City of Antioch, California.

Figure 1 shows the project site plan. **Figure 2** shows an aerial photo of the project site.

ENVIRONMENTAL SETTING

BACKGROUND INFORMATION ON NOISE

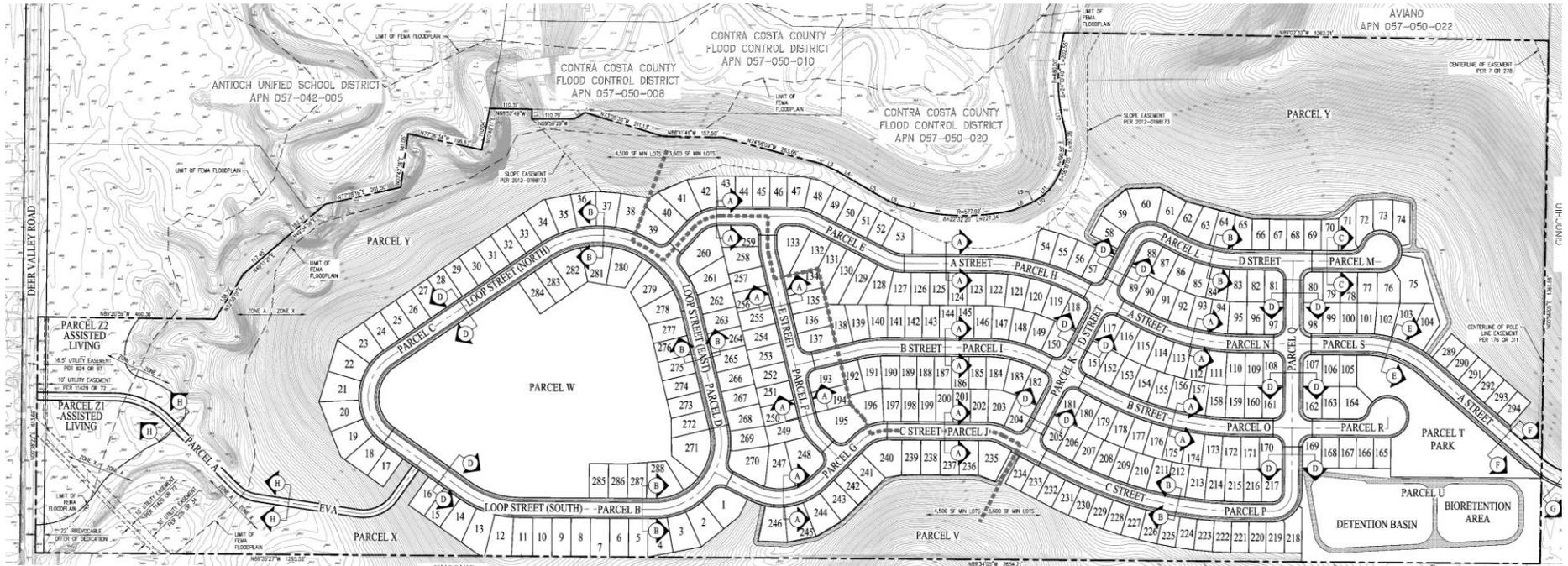
Fundamentals of Acoustics

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

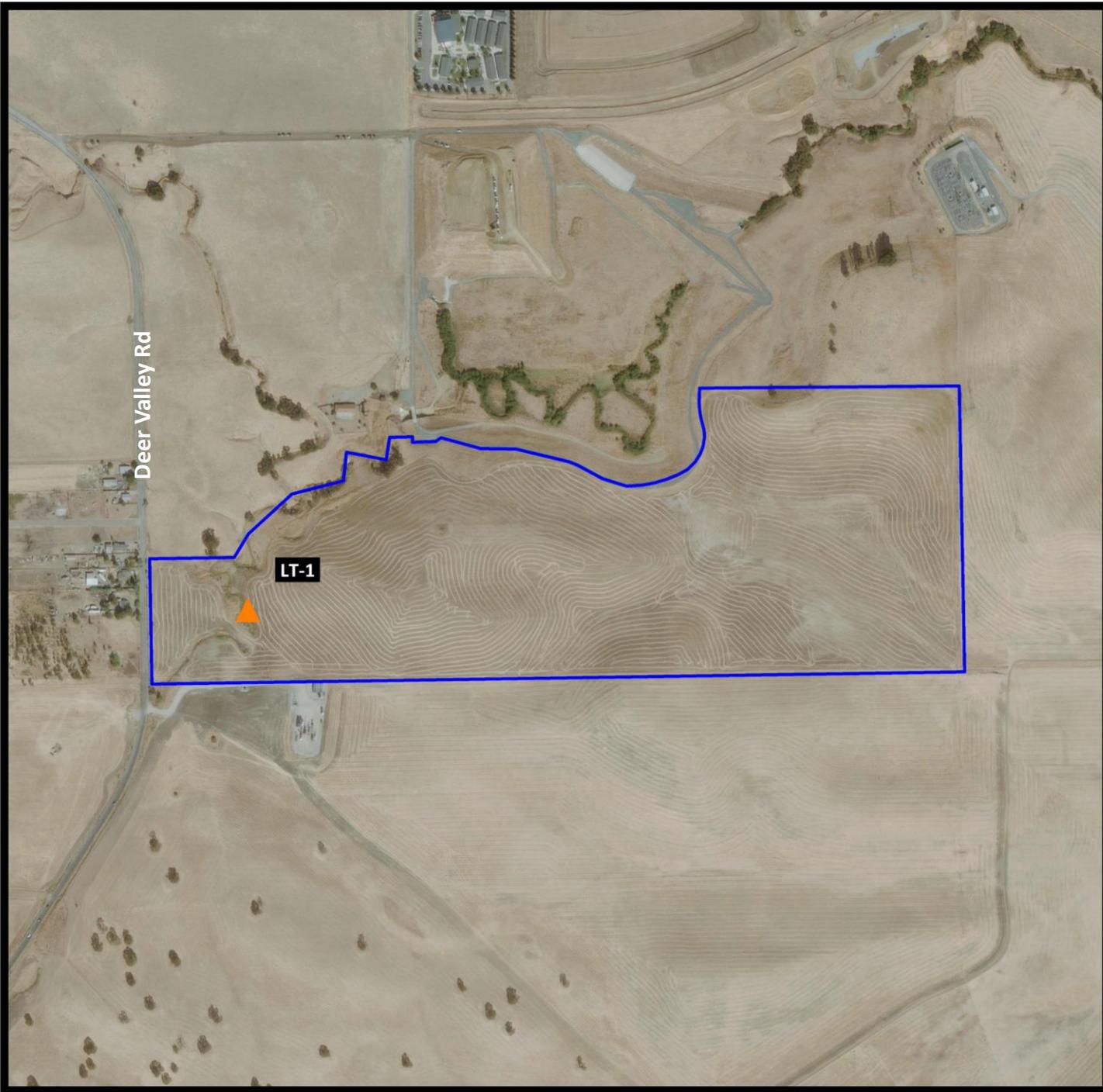
The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.



Albers Ranch Project
City of Antioch, California

Figure 1
Project Site Plan





Albers Ranch Project

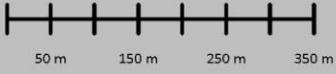
City of Antioch, California

Figure 2

Noise Measurement Sites

Legend

-  Project Site
-  Noise Measurement - Long Term



Projection: UTM Zone 10 / WGS84 / meters
Rev. Date: 06/15/2021



The decibel scale is logarithmic, not linear. In other words, two sound levels 10-dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10-dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn} , and shows very good correlation with community response to noise.

The day/night average level (DNL or L_{dn}) is based upon the average noise level over a 24-hour day, with a +10-decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Table 1 lists several examples of the noise levels associated with common situations. **Appendix A** provides a summary of acoustical terms used in this report.

TABLE 1: TYPICAL NOISE LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft.)	--100--	
Gas Lawn Mower at 1 m (3 ft.)	--90--	
Diesel Truck at 15 m (50 ft.), at 80 km/hr. (50 mph)	--80--	Food Blender at 1 m (3 ft.) Garbage Disposal at 1 m (3 ft.)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft.)	--70--	Vacuum Cleaner at 3 m (10 ft.)
Commercial Area Heavy Traffic at 90 m (300 ft.)	--60--	Normal Speech at 1 m (3 ft.)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans, *Technical Noise Supplement, Traffic Noise Analysis Protocol*. September, 2013.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6-dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

EXISTING AND FUTURE NOISE AND VIBRATION ENVIRONMENTS

EXISTING NOISE RECEPTORS

Some land uses are considered more sensitive to noise than others. Land uses often associated with sensitive receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Sensitive noise receptors may also include threatened or endangered noise sensitive biological species, although many jurisdictions have not adopted noise standards for wildlife areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise.

Sensitivity is a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved. In the vicinity of the project site, sensitive land uses include existing single-family residential uses located west and north of the project site.

EXISTING GENERAL AMBIENT NOISE LEVELS

The existing noise environment in the project area is primarily defined by traffic noise emanating from Deer Valley Road to the west of the project site.

To quantify the existing ambient noise environment in the project vicinity, a continuous (24-hr.) noise level measurement was conducted at one location on the project site. The noise measurement location is shown on **Figure 2**. A summary of the noise level measurement survey results is provided in **Table 2**. **Appendix B** contains the complete results of the noise monitoring.

The sound level meter was programmed to record the maximum, median, and average noise levels at the project site during the survey. The maximum value, denoted L_{max} , represents the highest noise level measured. The average value, denoted L_{eq} , represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period. The median value, denoted L_{50} , represents the sound level exceeded 50 percent of the time during the monitoring period.

A Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter was used for the ambient noise level measurement survey. The meter was calibrated before and after use with a B&K Model 4230 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

TABLE 2: SUMMARY OF EXISTING BACKGROUND NOISE MEASUREMENT DATA

Site	Date	Average Measured Hourly Noise Levels, dBA						
		CNEL/ L_{dn}	Daytime (7:00 am - 10:00 pm)			Nighttime (10:00 pm - 7:00 am)		
			L_{eq}	L_{50}	L_{max}	L_{eq}	L_{50}	L_{max}
LT-1	9/17/2019 - 9/18/2019	55	50	47	60	49	45	60

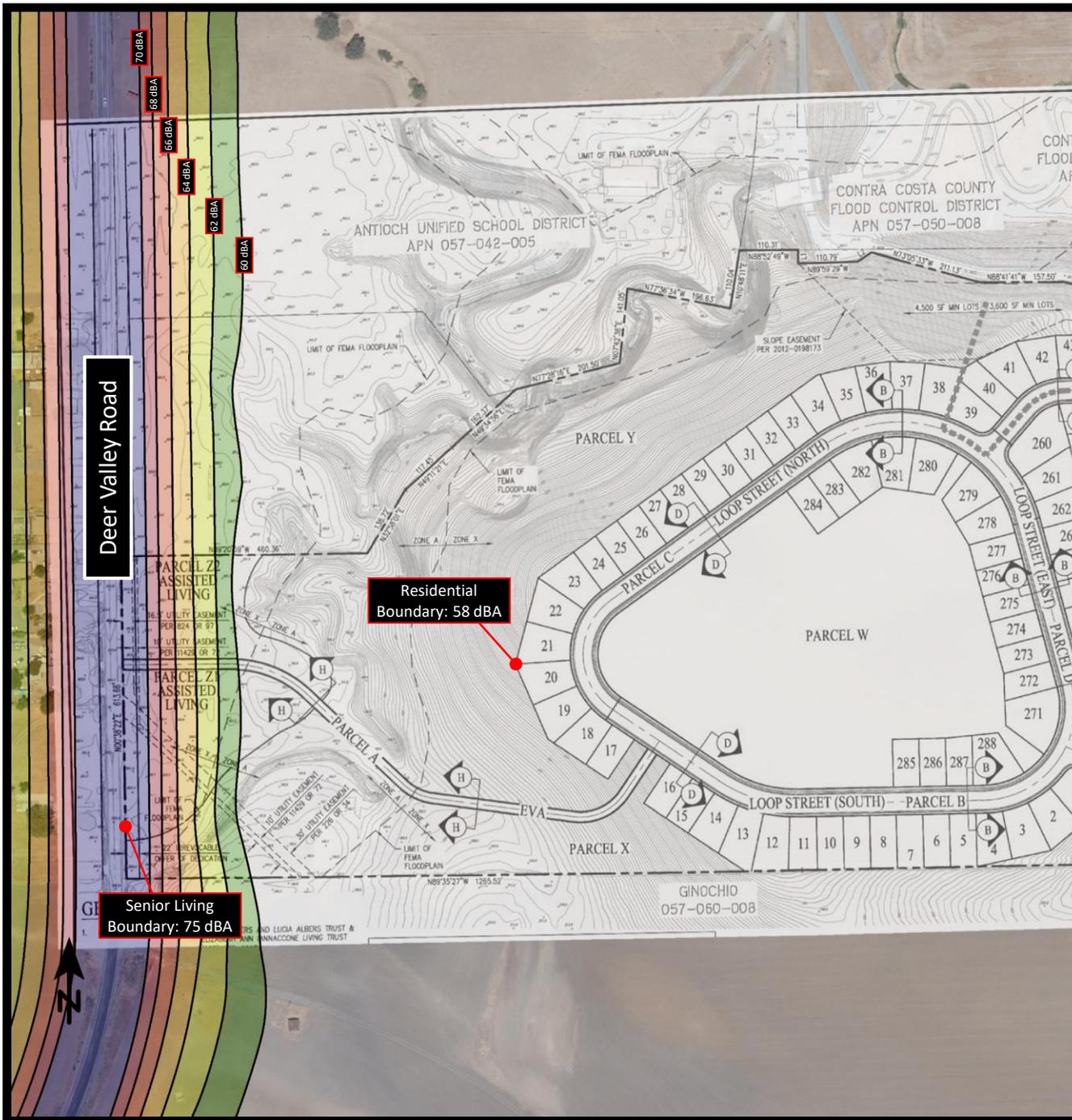
Source: j.c. brennan & associates – 2019

Albers Ranch Project

City of Antioch, California

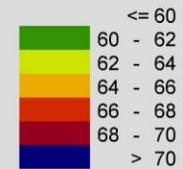
Figure 3

Project Noise Contours (dBA CNEL)



Signs and symbols

Levels in dB(A)



1 : 3250



FUTURE TRAFFIC NOISE ENVIRONMENT AT OFF-SITE RECEPTORS

OFF-SITE TRAFFIC NOISE IMPACT ASSESSMENT METHODOLOGY

To assess noise impacts due to project-related traffic increases on the local roadway network, traffic noise levels are predicted at sensitive receptors for existing and existing plus project conditions.

Existing noise levels due to traffic are calculated using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108). The model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To predict traffic noise levels in terms of L_{dn} , it is necessary to adjust the input volume to account for the day/night distribution of traffic.

Project trip generation volumes were provided by the project traffic engineer (Fehr & Peers, 2021), truck usage and vehicle speeds on the local area roadways were estimated from field observations. The predicted increases in traffic noise levels on the local roadway network for Existing, Near-Term, and Cumulative conditions which would result from the project are provided in terms of L_{dn} .

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each project-area roadway segment. In some locations sensitive receptors may not receive full shielding from noise barriers, or may be located at distances which vary from the assumed calculation distance.

Tables 3-5 summarize the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the Project area. **Appendix C** provides the complete inputs and results of the FHWA traffic modeling.

TABLE 3: PREDICTED TRAFFIC NOISE LEVEL AND PROJECT-RELATED TRAFFIC NOISE LEVEL INCREASES

Roadway	Segment	Predicted Exterior Noise Level (dBA L_{dn}) at Closest Sensitive Receptors		
		Existing + Creekside + Promenade	Existing + Project	Change
Deer Valley Road	Lone Tree Wy to Prewett Ranch Dr	62.4	62.6	0.2
Deer Valley Road	South of Prewett Ranch Dr	71.0	71.4	0.4
Lone Tree Way	Deer Valley Rd to Hillcrest Ave	64.0	64.2	0.2
Lone Tree Way	East of Hillcrest Ave	65.2	65.5	0.3
Prewett Ranch Rd	Deer Valley Rd to Hillcrest Ave	58.4	58.8	0.4
Hillcrest Ave	North of Lone Tree Way	60.6	61.3	0.8
Hillcrest Ave	Lone Tree Wy to Prewett Ranch Dr	61.9	62.6	0.7
Hillcrest Ave	South of Prewett Ranch Dr	57.5	59.8	2.3

TABLE 4: NEAR-TERM TRAFFIC NOISE LEVEL AND PROJECT-RELATED TRAFFIC NOISE LEVEL INCREASES

Roadway	Segment	Predicted Exterior Noise Level (dBA L _{dn}) at Closest Sensitive Receptors		
		Near-Term No Project	Near-Term + Project	Change
Deer Valley Road	Lone Tree Wy to Prewett Ranch Dr	64.2	64.3	0.1
Deer Valley Road	South of Prewett Ranch Dr	73.1	73.4	0.3
Lone Tree Way	Deer Valley Rd to Hillcrest Ave	65.5	65.6	0.1
Lone Tree Way	East of Hillcrest Ave	65.9	66.1	0.2
Prewett Ranch Rd	Deer Valley Rd to Hillcrest Ave	59.9	60.2	0.3
Hillcrest Ave	North of Lone Tree Way	61.6	62.1	0.5
Hillcrest Ave	Lone Tree Wy to Prewett Ranch Dr	62.2	62.7	0.5
Hillcrest Ave	South of Prewett Ranch Dr	61.0	61.9	0.9

TABLE 5: CUMULATIVE TRAFFIC NOISE LEVEL AND PROJECT-RELATED TRAFFIC NOISE LEVEL INCREASES

Roadway	Segment	Predicted Exterior Noise Level (dBA L _{dn}) at Closest Sensitive Receptors		
		Cumulative No Project	Cumulative + Project	Change
Deer Valley Road	Lone Tree Wy to Prewett Ranch Dr	64.8	64.9	0.1
Deer Valley Road	South of Prewett Ranch Dr	72.9	73.2	0.3
Lone Tree Way	Deer Valley Rd to Hillcrest Ave	66.0	66.1	0.1
Lone Tree Way	East of Hillcrest Ave	66.8	67.0	0.1
Prewett Ranch Rd	Deer Valley Rd to Hillcrest Ave	60.3	60.4	0.1
Hillcrest Ave	North of Lone Tree Way	65.2	65.4	0.2
Hillcrest Ave	Lone Tree Wy to Prewett Ranch Dr	63.9	64.2	0.4
Hillcrest Ave	South of Prewett Ranch Dr	63.1	63.7	0.6

Based upon the data in **Tables 3-5**, the proposed project is predicted to result in an increase in a maximum traffic noise level increase of 2.3 dBA.

CONSTRUCTION NOISE ENVIRONMENT

During the construction of the proposed project, including roads, water and sewer lines, and related infrastructure, noise from construction activities would temporarily add to the noise environment in the project vicinity. As shown in **Table 6**, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dB at a distance of 50 feet.

TABLE 6: CONSTRUCTION EQUIPMENT NOISE

Type of Equipment	Maximum Level, dBA at 50 feet
Auger Drill Rig	84
Backhoe	78
Compactor	83
Compressor (air)	78
Concrete Saw	90
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Jackhammer	89
Pneumatic Tools	85

Source: *Roadway Construction Noise Model User's Guide*. Federal Highway Administration. FHWA-HEP-05-054. January 2006.

CONSTRUCTION VIBRATION ENVIRONMENT

The primary vibration-generating activities associated with the proposed project would occur during construction when activities such as grading, utilities placement, and parking lot construction occur. **Table 7** shows the typical vibration levels produced by construction equipment.

TABLE 7: VIBRATION LEVELS FOR VARIOUS CONSTRUCTION EQUIPMENT

Type of Equipment	Peak Particle Velocity at 25 feet (inches/second)	Peak Particle Velocity at 50 feet (inches/second)	Peak Particle Velocity at 100 feet (inches/second)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210 (Less than 0.20 at 26 feet)	0.074	0.026

Source: *Transit Noise and Vibration Impact Assessment Guidelines*. Federal Transit Administration. May 2006.

REGULATORY CONTEXT

FEDERAL

There are no federal regulations related to noise that apply to the Proposed Project.

STATE

The State Building Code, Title 24, Part 2 of the State of California Code of Regulations, establishes uniform minimum noise insulation performance standards to protect persons within new buildings which house people, including hotels, motels, dormitories, apartment houses, and dwellings other than single-family dwellings. Title 24 mandates that interior noise levels attributable to exterior sources shall not exceed 45 dB L_{dn} or CNEL in any habitable room. Title 24 also mandates that for structures containing noise-sensitive uses to be located where the L_{dn} or CNEL exceeds 60 dB, an acoustical analysis must be prepared to identify mechanisms for limiting exterior noise to the prescribed allowable interior levels. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior environment.

LOCAL

City of Antioch General Plan

The Antioch General Plan Noise Element Section 11.6.1 establishes standards for daytime and nighttime noise levels. The standards are reproduced in below:

11.6.1 Noise Objective: Achieve and maintain exterior noise levels appropriate to planned land uses through Antioch, as described below:

- Residential Single Family: 60 dBA CNEL within rear yards;
- Residential Multi-Family: 60 dBA CNEL within interior open space;
- Commercial/Industrial: 70 dBA at front setback;

The Antioch General Plan Noise Element Section 11.6.1 establishes standards for maximum allowable noise exposure from transportation noise sources. The maximum allowable exterior noise level is 60 dBA CNEL, applied at outdoor activity areas of single-family residential uses.

Criteria for Acceptable Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. **Table 8**, which was developed by Caltrans, shows the vibration levels which would normally be required to result in damage to structures. The vibration levels are presented in terms of peak particle velocity in inches per second.

Table 8 indicates that the threshold for architectural damage to structures is 0.20 in/sec p.p.v. A threshold of 0.2 in/sec p.p.v. is considered to be a reasonable threshold for short-term construction projects.

TABLE 8: EFFECTS OF VIBRATION ON PEOPLE AND BUILDINGS

Peak Particle Velocity		Human Reaction	Effect on Buildings
mm/second	in/second		
0.15-0.30	0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10-15	0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: *Transportation Related Earthborne Vibrations*. Caltrans. TAV-02-01-R9601. February 20, 2002.

IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Appendix G of the CEQA Guidelines states that a project would normally be considered to result in significant noise impacts if noise levels conflict with adopted environmental standards or plans or if noise generated by the project would substantially increase existing noise levels at sensitive receivers on a permanent or temporary basis. Significance criteria for noise impacts are drawn from CEQA Guidelines Appendix G (Items XI [a-c]).

Would the project:

- a. Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- b. Generate excessive groundborne vibration or groundborne noise levels?
- c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Noise Level Increase Criteria for Long-Term Project-Related Noise Level Increases

The California Environmental Quality Act (CEQA) guidelines define a significant impact of a project if it “increases substantially the ambient noise levels for adjoining areas.” Generally, a project may have a significant effect on the environment if it will substantially increase the ambient noise levels for adjoining areas or expose people to severe noise levels. In practice, more specific professional standards have been developed. These standards state that a noise impact may be considered significant if it would generate noise that would conflict with local project criteria or ordinances, or substantially increase noise levels at noise sensitive land uses. The potential increase in traffic noise from the project is a factor in determining significance. Research into the human perception of changes in sound level indicates the following:

- A 3-dB change is barely perceptible,
- A 5-dB change is clearly perceptible, and
- A 10-dB change is perceived as being twice or half as loud.

A limitation of using a single noise level increase value to evaluate noise impacts is that it fails to account for pre-project-noise conditions. **Table 9** is based upon recommendations made by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been accepted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the $L_{dn}/CNEL$.

TABLE 9: SIGNIFICANCE OF CHANGES IN NOISE EXPOSURE

Ambient Noise Level Without Project, $L_{dn}/CNEL$	Increase Required for Significant Impact
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

Source: Federal Interagency Committee on Noise (FICON)

Based on the **Table 9** data, an increase in the traffic noise level of 5 dB or more would be significant where the pre-project noise levels are less than 60 dB $L_{dn}/CNEL$, or 3 dB or more where existing noise levels are between 60 to 65 dB $L_{dn}/CNEL$. Extending this concept to higher noise levels, an increase in the traffic noise level of 1.5 dB or more may be significant where the pre-project traffic noise level exceeds 65 dB $L_{dn}/CNEL$. The rationale for the **Table 9** criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause annoyance.

PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES

IMPACT 1: WOULD THE PROJECT GENERATE A SUBSTANTIAL TEMPORARY OR PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE VICINITY OF THE PROJECT IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES?

Traffic Noise Increases

Based upon the **Table 9** criteria, where existing traffic noise levels are greater than 65 dB CNEL, at the outdoor activity areas of noise-sensitive uses, a +1.5 dB CNEL increase in roadway noise levels will be considered significant. As shown in **Table 3**, the maximum increase in traffic noise at the nearest sensitive receptor is predicted to be 2.3 dBA under the proposed project. At this location, the existing transportation noise level is less than 60 dB CNEL. In noise environments where the ambient noise level is less than 60 dB CNEL, a +5.0 dB increase is considered significant. Therefore, impacts resulting from increased traffic noise would be considered ***less-than-significant*** since the predicted increase is less than 5.0 dB.

Operational Noise at Existing Sensitive Receptors

The proposed project would include typical residential noise which would be compatible with the adjacent existing residential uses. Therefore, impacts resulting from project operational noise would be considered ***less-than-significant***.

Construction Noise

During the construction phases of the project, noise from construction activities would add to the noise environment in the immediate project vicinity. As indicated in **Table 6**, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dBA L_{max} at a distance of 50 feet. Construction activities would also be temporary in nature and are anticipated to occur during normal daytime working hours.

Noise would also be generated during the construction phase by increased truck traffic on area roadways. A project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from the construction site. This noise increase would be of short duration and would occur during daytime hours.

Construction activities are limited by the General Plan Noise Element the Noise Ordinance during certain hours. The General Plan limits noise-producing construction related activities to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday, with no construction allowed on Sundays and public holidays. Sections 5-17.04 and 5-17.05 of the City of Antioch Municipal code restrict construction activities to between the hours of 8:00 a.m. and 5:00 p.m. on Monday through Friday when located within 300 feet of residential uses, and to the hours of 9:00 a.m. and 5:00 p.m. on Saturdays.

Although construction activities are temporary in nature and would occur during normal daytime working hours, construction-related noise could result in sleep interference at existing noise-sensitive land uses in the vicinity of the construction if construction activities were to occur outside the normal daytime hours. Therefore, impacts resulting from noise levels temporarily exceeding the threshold of significance due to construction would be considered **potentially significant**.

Exterior noise at New Sensitive Receptors (Non-CEQA Issue)

Exterior Transportation Noise

As shown on **Figure 3**, the western boundary of the proposed single-family residential uses is predicted to be exposed to exterior noise levels of 58 dBA CNEL or less. This would comply with the 60 dB limit for outdoor activity areas of new residential uses. Therefore, no additional noise control measures would be necessary to meet the City of Antioch's exterior transportation noise criteria.

The western boundary of the proposed commercial/senior living facilities is predicted be exposed to noise levels of 75 dBA CNEL. To comply with the City of Antioch exterior transportation noise criteria, commercial uses would be required to be setback to the 70 dBA contour, which is located 70 feet from the centerline of Deer Valley Road.

Interior Transportation Noise

Based upon **Figure 3**, the proposed project would be exposed to exterior noise levels of less than 60 dBA CNEL at the proposed building facades. Modern building construction methods typically yield an exterior-to-interior noise level reduction of 25 dBA. Therefore, where exterior noise levels are 70 dBA CNEL, or less, no additional interior noise control measures are typically required. For this project, exterior noise levels are predicted to be up to 60 dBA CNEL, resulting in an interior noise level of 35 dBA CNEL based on typical building construction. This would comply with the State's 45 dBA L_{dn} /CNEL interior noise level standard. Therefore, no additional noise control measures would be required for the single-family residential uses.

The western boundary of the commercial/senior living facility land uses is exposed to exterior noise levels of up to 75 dBA CNEL. Therefore, project facades may be exposed to noise levels exceeding 70 dBA CNEL resulting in interior noise levels above 45 dBA CNEL. To determine if additional noise control beyond typical building construction is required, an acoustical study must be performed once building plans become available.

Mitigation Measure

MM-1 The City shall establish the following requirement:

- Construction activities shall be limited to the hours of 8:00 a.m. and 5:00 p.m. Monday through Friday when work is within 300 feet of occupied dwellings, and to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday when work occurs greater than 300 feet from occupied dwellings. Such activities should be limited to the hours of 9:00 a.m. and 5:00 p.m. on Saturdays. No construction shall be allowed on Sundays and public holidays.
- The construction contractor shall use temporary noise attenuation fences to protect sensitive receptors west of the project site.
- The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
- Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.
- When not in use, motorized construction equipment shall not be left idling for more than 5 minutes.
- Stationary equipment (power generators, compressors, etc.) shall be located at the furthest practical distance from nearby noise-sensitive land uses or sufficiently shielded to reduce noise-related impacts.

Timing/Implementation: Implemented prior to approval of grading and/or building permits

Enforcement/Monitoring: City of Antioch Community Development Department

Implementation of mitigation measure 1 would help to reduce construction-generated noise levels. With mitigation, this impact would be considered ***less-than-significant***.

Recommended Condition of Approval

- Any commercial building proposed along Deer Valley Road must be set back from the centerline of Deer Valley Road at least 70 feet to fall outside of the 70 dBA CNEL noise level contour;
- Any proposed senior housing located along Deer Valley Road shall have a noise study prepared to demonstrate compliance with the City's exterior and interior noise standards. The noise study shall, as applicable, include recommendations for the appropriate methods for reducing noise levels at the sites to within the City's noise standards. The effectiveness of the mitigation, if required, shall be documented by the noise study. The noise study shall be submitted prior to the approval of tentative maps or site plans for the senior housing uses located along Deer Valley Road and shall be subject to review and approval by the City of Antioch.

IMPACT 2: WOULD THE PROJECT GENERATE EXCESSIVE GROUNDBORNE VIBRATION OR GROUNDBORNE NOISE LEVELS?

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural.

The **Table 5** data indicate that construction vibration levels anticipated for the project are less than the 0.2 in/sec threshold at distances of 26 feet. Sensitive receptors which could be impacted by construction related vibrations, especially vibratory compactors/rollers, are located approximately 26 feet, or further, from typical construction activities. At these distances construction vibrations are not predicted to exceed acceptable levels. Additionally, construction activities would be temporary in nature and would likely occur during normal daytime working hours.

This is a **less-than-significant** impact and no mitigation is required.

IMPACT 3: FOR A PROJECT LOCATED WITHIN THE VICINITY OF A PRIVATE AIRSTRIP OR AN AIRPORT LAND USE PLAN OR, WHERE SUCH A PLAN HAS NOT BEEN ADOPTED, WITHIN TWO MILES OF A PUBLIC AIRPORT OR PUBLIC USE AIRPORT, WOULD THE PROJECT EXPOSE PEOPLE RESIDING OR WORKING IN THE PROJECT AREA TO EXCESSIVE NOISE LEVELS?

There are no airports within two miles of the proposed project. Therefore, this is a **less-than-significant** impact and no mitigation is required.

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Appendix A: Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
ASTC	Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by +5 dBA and nighttime hours weighted by +10 dBA.
DNL	See definition of Ldn.
IIC	Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
NIC	Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation.
NNIC	Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation.
Noise	Unwanted sound.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
RT60	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
SPC	Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

Appendix B: Continuous Ambient Noise Measurement Results

Appendix B1: Continuous Noise Monitoring Results

Date	Time	Measured Level, dBA			
		L _{eq}	L _{max}	L ₅₀	L ₉₀
Tuesday, September 17, 2019	13:00	50	62	49	45
Tuesday, September 17, 2019	14:00	51	64	50	46
Tuesday, September 17, 2019	15:00	51	58	51	46
Tuesday, September 17, 2019	16:00	51	63	51	47
Tuesday, September 17, 2019	17:00	52	63	50	46
Tuesday, September 17, 2019	18:00	50	59	49	46
Tuesday, September 17, 2019	19:00	49	59	49	44
Tuesday, September 17, 2019	20:00	49	65	48	45
Tuesday, September 17, 2019	21:00	47	58	46	42
Tuesday, September 17, 2019	22:00	47	57	45	42
Tuesday, September 17, 2019	23:00	48	66	46	43
Wednesday, September 18, 2019	0:00	46	64	44	42
Wednesday, September 18, 2019	1:00	45	56	44	42
Wednesday, September 18, 2019	2:00	43	55	41	39
Wednesday, September 18, 2019	3:00	44	59	41	39
Wednesday, September 18, 2019	4:00	48	61	46	43
Wednesday, September 18, 2019	5:00	50	61	48	44
Wednesday, September 18, 2019	6:00	55	62	54	49
Wednesday, September 18, 2019	7:00	55	60	55	51
Wednesday, September 18, 2019	8:00	46	57	45	41
Wednesday, September 18, 2019	9:00	45	56	44	39
Wednesday, September 18, 2019	10:00	44	56	43	38
Wednesday, September 18, 2019	11:00	47	63	41	37
Wednesday, September 18, 2019	12:00	42	56	40	36

Statistics	Leq	Lmax	L50	L90
Day Average	50	60	47	43
Night Average	49	60	45	43
Day Low	42	56	40	36
Day High	55	65	55	51
Night Low	43	55	41	39
Night High	55	66	54	49
Ldn	55	Day %		67
CNEL	56	Night %		33

*Data collected by j.c. brennan & associates, Inc.

Site: LT-1

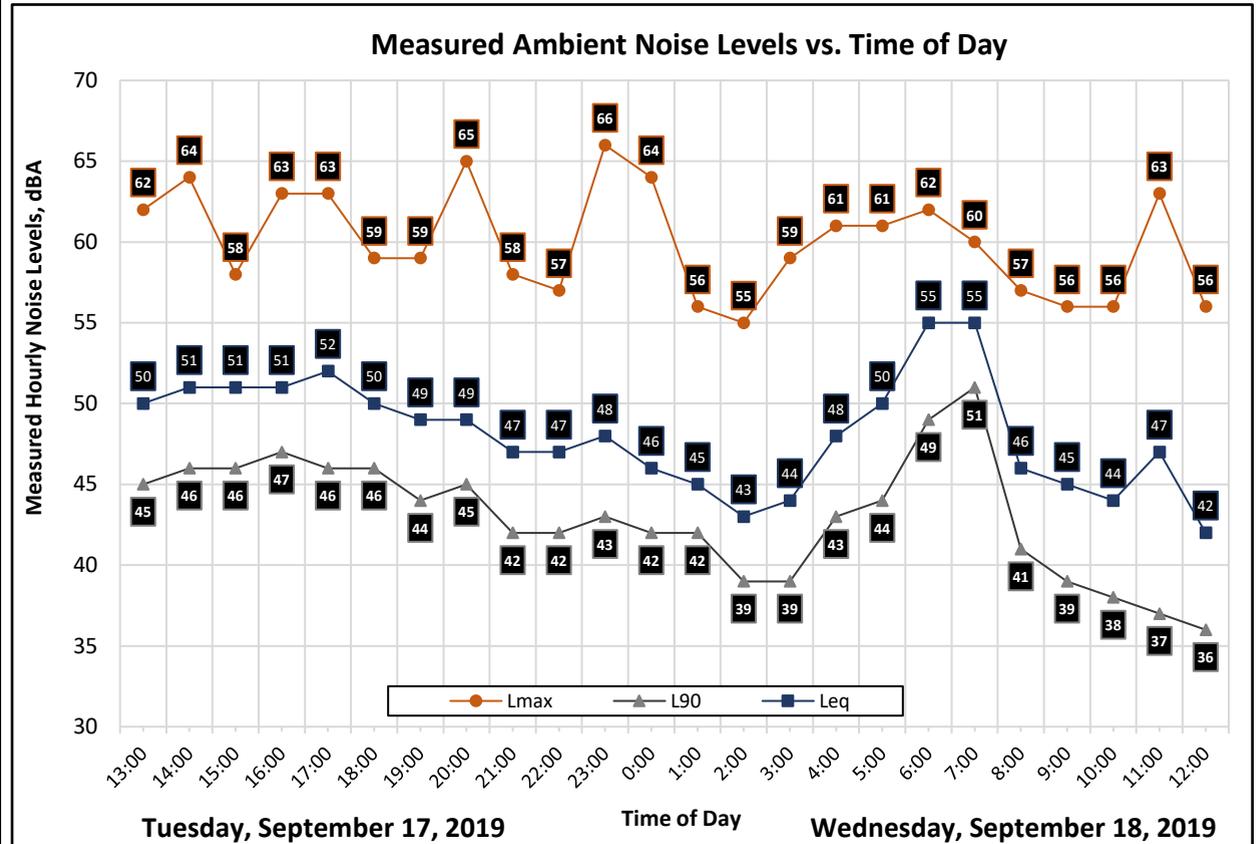
Project: 210503 City of Antioch-Albers Ranch IS

Meter: LDL 820

Location: Western Project Site

Calibrator: CAL200

Coordinates: 37.940708°, -121.771858°



Appendix C: Traffic Noise Calculation Inputs and Results



Appendix C-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 210503

Description: Albers Ranch IS - Existing + Creekside + Promenade Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset			Level, dBA
												60 dBA	65 dBA	70 dBA	
1	Deer Valley Road	Lone Tree Wy to Prewett Ranch Dr	11,860	67	0	33	1.0%	1.0%	45	75	-5	234	109	50	62.4
2	Deer Valley Road	South of Prewett Ranch Dr	11,590	67	0	33	1.0%	1.0%	55	60	0	325	151	70	71.0
3	Lone Tree Way	Deer Valley Rd to Hillcrest Ave	18,960	67	0	33	1.0%	1.0%	45	80	-5	320	149	69	64.0
4	Lone Tree Way	East of Hillcrest Ave	26,950	67	0	33	1.0%	1.0%	45	85	-5	405	188	87	65.2
5	Prewett Ranch Rd	Deer Valley Rd to Hillcrest Ave	6,060	67	0	33	1.0%	1.0%	30	50	-5	85	39	18	58.4
6	Hillcrest Ave	North of Lone Tree Way	6,970	67	0	33	1.0%	1.0%	45	70	-5	164	76	35	60.6
7	Hillcrest Ave	Lone Tree Wy to Prewett Ranch Dr	11,500	67	0	33	1.0%	1.0%	45	80	-5	230	107	49	61.9
8	Hillcrest Ave	South of Prewett Ranch Dr	4,250	67	0	33	1.0%	1.0%	45	80	-5	118	55	25	57.5

Appendix C-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 210503

Description: Albers Ranch IS - Existing Plus Project Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset			Level, dBA
												60 dBA	65 dBA	70 dBA	
1	Deer Valley Road	Lone Tree Wy to Prewett Ranch Dr	12,360	67	0	33	1.0%	1.0%	45	75	-5	241	112	52	62.6
2	Deer Valley Road	South of Prewett Ranch Dr	12,700	67	0	33	1.0%	1.0%	55	60	0	345	160	74	71.4
3	Lone Tree Way	Deer Valley Rd to Hillcrest Ave	19,860	67	0	33	1.0%	1.0%	45	80	-5	330	153	71	64.2
4	Lone Tree Way	East of Hillcrest Ave	28,760	67	0	33	1.0%	1.0%	45	85	-5	423	196	91	65.5
5	Prewett Ranch Rd	Deer Valley Rd to Hillcrest Ave	6,570	67	0	33	1.0%	1.0%	30	50	-5	89	41	19	58.8
6	Hillcrest Ave	North of Lone Tree Way	8,300	67	0	33	1.0%	1.0%	45	70	-5	185	86	40	61.3
7	Hillcrest Ave	Lone Tree Wy to Prewett Ranch Dr	13,460	67	0	33	1.0%	1.0%	45	80	-5	255	118	55	62.6
8	Hillcrest Ave	South of Prewett Ranch Dr	7,140	67	0	33	1.0%	1.0%	45	80	-5	167	78	36	59.8

Appendix C-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 210503

Description: Albers Ranch IS - Baseline

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset			Level, dBA
												60 dBA	65 dBA	70 dBA	
1	Deer Valley Road	Lone Tree Wy to Prewett Ranch Dr	17,770	67	0	33	1.0%	1.0%	45	75	-5	307	142	66	64.2
2	Deer Valley Road	South of Prewett Ranch Dr	18,890	67	0	33	1.0%	1.0%	55	60	0	450	209	97	73.1
3	Lone Tree Way	Deer Valley Rd to Hillcrest Ave	26,460	67	0	33	1.0%	1.0%	45	80	-5	400	186	86	65.5
4	Lone Tree Way	East of Hillcrest Ave	32,210	67	0	33	1.0%	1.0%	45	85	-5	456	212	98	65.9
5	Prewett Ranch Rd	Deer Valley Rd to Hillcrest Ave	8,550	67	0	33	1.0%	1.0%	30	50	-5	106	49	23	59.9
6	Hillcrest Ave	North of Lone Tree Way	8,890	67	0	33	1.0%	1.0%	45	70	-5	193	90	42	61.6
7	Hillcrest Ave	Lone Tree Wy to Prewett Ranch Dr	12,290	67	0	33	1.0%	1.0%	45	80	-5	240	111	52	62.2
8	Hillcrest Ave	South of Prewett Ranch Dr	9,340	67	0	33	1.0%	1.0%	45	80	-5	200	93	43	61.0

Appendix C-4

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 210503

Description: Albers Ranch IS - Baseline Plus Project

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset			Level, dBA
												60 dBA	65 dBA	70 dBA	
1	Deer Valley Road	Lone Tree Wy to Prewett Ranch Dr	18,270	67	0	33	1.0%	1.0%	45	75	-5	313	145	67	64.3
2	Deer Valley Road	South of Prewett Ranch Dr	20,020	67	0	33	1.0%	1.0%	55	60	0	468	217	101	73.4
3	Lone Tree Way	Deer Valley Rd to Hillcrest Ave	27,360	67	0	33	1.0%	1.0%	45	80	-5	409	190	88	65.6
4	Lone Tree Way	East of Hillcrest Ave	33,710	67	0	33	1.0%	1.0%	45	85	-5	470	218	101	66.1
5	Prewett Ranch Rd	Deer Valley Rd to Hillcrest Ave	9,080	67	0	33	1.0%	1.0%	30	50	-5	111	51	24	60.2
6	Hillcrest Ave	North of Lone Tree Way	9,930	67	0	33	1.0%	1.0%	45	70	-5	208	97	45	62.1
7	Hillcrest Ave	Lone Tree Wy to Prewett Ranch Dr	13,810	67	0	33	1.0%	1.0%	45	80	-5	259	120	56	62.7
8	Hillcrest Ave	South of Prewett Ranch Dr	11,600	67	0	33	1.0%	1.0%	45	80	-5	231	107	50	61.9

Appendix C-5

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 210503

Description: Albers Ranch IS - Cumulative

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset			Level, dBA
												60 dBA	65 dBA	70 dBA	
1	Deer Valley Road	Lone Tree Wy to Prewett Ranch Dr	20,350	67	0	33	1.0%	1.0%	45	75	-5	336	156	72	64.8
2	Deer Valley Road	South of Prewett Ranch Dr	18,080	67	0	33	1.0%	1.0%	55	60	0	437	203	94	72.9
3	Lone Tree Way	Deer Valley Rd to Hillcrest Ave	29,960	67	0	33	1.0%	1.0%	45	80	-5	435	202	94	66.0
4	Lone Tree Way	East of Hillcrest Ave	39,590	67	0	33	1.0%	1.0%	45	85	-5	523	243	113	66.8
5	Prewett Ranch Rd	Deer Valley Rd to Hillcrest Ave	9,300	67	0	33	1.0%	1.0%	30	50	-5	112	52	24	60.3
6	Hillcrest Ave	North of Lone Tree Way	20,210	67	0	33	1.0%	1.0%	45	70	-5	334	155	72	65.2
7	Hillcrest Ave	Lone Tree Wy to Prewett Ranch Dr	18,250	67	0	33	1.0%	1.0%	45	80	-5	312	145	67	63.9
8	Hillcrest Ave	South of Prewett Ranch Dr	15,300	67	0	33	1.0%	1.0%	45	80	-5	278	129	60	63.1

Appendix C-6

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 210503

Description: Albers Ranch IS - Cumulative Plus Project

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset			Level, dBA
												60 dBA	65 dBA	70 dBA	
1	Deer Valley Road	Lone Tree Wy to Prewett Ranch Dr	20,960	67	0	33	1.0%	1.0%	45	75	-5	343	159	74	64.9
2	Deer Valley Road	South of Prewett Ranch Dr	19,170	67	0	33	1.0%	1.0%	55	60	0	455	211	98	73.2
3	Lone Tree Way	Deer Valley Rd to Hillcrest Ave	30,790	67	0	33	1.0%	1.0%	45	80	-5	443	205	95	66.1
4	Lone Tree Way	East of Hillcrest Ave	40,830	67	0	33	1.0%	1.0%	45	85	-5	534	248	115	67.0
5	Prewett Ranch Rd	Deer Valley Rd to Hillcrest Ave	9,550	67	0	33	1.0%	1.0%	30	50	-5	114	53	25	60.4
6	Hillcrest Ave	North of Lone Tree Way	21,340	67	0	33	1.0%	1.0%	45	70	-5	347	161	75	65.4
7	Hillcrest Ave	Lone Tree Wy to Prewett Ranch Dr	19,810	67	0	33	1.0%	1.0%	45	80	-5	330	153	71	64.2
8	Hillcrest Ave	South of Prewett Ranch Dr	17,560	67	0	33	1.0%	1.0%	45	80	-5	304	141	66	63.7