CITY OF ANTIOCH

WILDFLOWER STATION PROJECT

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

Prepared for:

CITY OF ANTIOCH
200 H STREET
ANTIOCH CA 94509

Prepared by:

Michael Baker INTERNATIONAL

2729 PROSPECT PARK DRIVE, SUITE 220
RANCHO CORDOVA, CA 95670

SEPTEMBER 2017

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A. ENVIRONMENTAL CHECKLIST FORM

1. Project title:	Wildflower Station
2. Lead agency name and address:	City of Antioch 200 H Street, Second Floor Antioch, CA 94509
3. Contact person and phone number:	Alexis Morris, Planning Manager; (925) 779-7035
4. Project location:	The 23.03-acre project site is located north of the intersection of Wildflower Drive and Hillcrest Avenue in Antioch, Contra Costa County, California. The project site is located south of State Route 4. The project site consists of one parcel identified as Assessor's Parcel Number (APN) 051-140-002. The project location is shown on **Figure 1**.
5. Project sponsor's name and address:	DeNova Homes 1500 Willow Pass Court Concord, CA 94520
6. General Plan designation:	Neighborhood/Community Commercial
7. Zoning:	Planned Development (P-D 81-8) and Neighborhood/Community Commercial (C-2)

8. Project Description:

This section describes the proposed Wildflower Station (project), which consists of the construction of 98 condominiums and 22 single-family homes, in addition to 89,422 square feet of commercial, office, and dining space. This section includes a depiction of the location of the project site, both regionally and locally, and a description of the project site's existing conditions. The objectives sought by the project applicant and a detailed list of the approvals required to implement the project are also included. This project description has been prepared in compliance with California Environmental Quality Act (CEQA) Guidelines Section 15124.

PROJECT LOCATION AND SETTING

The approximately 23-acre site (Assessor's Parcel Numbers [APN] 051-140-002) is located north of the intersection of Wildflower Drive and Hillcrest Avenue and east of the intersection of Hillcrest Avenue/Deer Valley Road and Davison Drive in north-central Antioch. The site is approximately one-quarter mile south of State Route (SR) 4 (**Figure 1**).

The project site is undeveloped and covered with low grasses and a few scattered shrubs and trees. The site is relatively flat along its western and southern boundaries, near Hillcrest Avenue, but ascends to a small ridge on the east with slopes up to 15 percent. A high-power electric transmission line crosses the site along its eastern boundary near the top of the ridge. A northerly-flowing, man-made, unlined drainage channel is located along and near the toe of the slope with a width ranging from 40 to 70 feet. Sidewalks are present along each of the roadways that abut the project site and a Class II bike lane is present along Hillcrest Avenue near the site.

SURROUNDING LAND USES

The project site is surrounded on all sides by existing urban development. The site abuts an existing retail center to the north and single-family residential to the northeast. Additional single-family residential development is located west of the site across Hillcrest Avenue and the Crossings Shopping Center is located to the southwest.

EXISTING GENERAL PLAN LAND USE DESIGNATIONS AND ZONING

The project site is currently designated Neighborhood /Community Commercial in the City of Antioch General Plan. The existing zoning for the site is Planned Development (PD 81-8) and Neighborhood/Community Commercial (C-2). The primary purpose of the C-2 district is to provide for the sale of convenience goods, food, drugs, sundries, and personal necessities.

PROJECT CHARACTERISTICS

The applicant proposes to subdivide and develop the site for retail and single- and multi-family residential uses. The site will be subdivided into three parcels (see **Figure 2**) to accommodate retail development along Hillcrest Avenue, high-density multi-family residential adjacent to a shared access with the retail development, and detached single-family homes on the upper portion of the site. The proposed development will include six bioretention basins extending north and south along the slope. The proposed site plan is shown on **Figure 3**.

The large-scale mixed-use development would consist of 10.45 acres of commercial use, 7.0 acres of condominiums, 4.05 acres of single-family housing, and 1.08 acres dedicated to right-of-way on Hillcrest Avenue (see **Table 1**).

The General Plan land use designation for the project site is Neighborhood/Community Commercial, which allows neighborhood retail development on lots ranging from 3 to 12 acres that is anchored by a major supermarket and/or drugstore. The zoning is Neighborhood/Community Commercial District (C-2) with a very small portion in the site's southeast corner zoned as Planned Development (PD 81-8). The applicant proposes a General Plan amendment to redesignate the project site to Mixed Use and a rezone to change the zoning to Planned Development to allow for the proposed mixed-use development.

TABLE 1
LAND USE SUMMARY

Proposed Use	Acreage	Residential Units	Commercial Square Footage	Parking
Single family	4.05	22	—	—
Multi family	7.0	98	—	186
Commercial	10.45	—	89,422	390
Public right-of-way	1.08	—	—	—
Total		**120**	**89,422**	**576**

RESIDENTIAL DEVELOPMENT

Development will include 4.05 acres of family homes on lots ranging from 3,062 square feet to 5,961 square feet. The 22 single-family homes will be positioned on the northeast edge of the project site and will be adjacent to existing residences on Wildflower Drive.

Development will also include 7.0 acres of multi-family residences. These residences will be located at the base of the slope, extending to the north and south sides of the project site. A total of 98 condominiums will be developed throughout two residential buildings. Units will range from 674 square feet to 1,149 square feet. The development will include 98 covered and 88 uncovered parking spaces.

COMMERCIAL DEVELOPMENT

Commercial development will include nine buildings ranging from 3,225 square feet to 23,723 square feet along the west edge of the project site. A common area will be developed and will include open space and landscaping. The commercial development will be accompanied by 390 parking spaces to accommodate the nine commercial buildings.

SITE ACCESS AND CIRCULATION

Access to the proposed site will be via Hillcrest Avenue, Wildflower Drive, and a new private cul-de-sac along which the single-family homes will be developed. Sidewalks, crosswalks, and landscape buffers will be incorporated into the project to promote walkability.

UTILITIES AND SERVICES

Anticipated utilities for the proposed development include the City of Antioch for water and sewer, Pacific Gas and Electric Company for electricity and gas, AT&T for telephone services, Comcast for cable services, and Allied Waste for garbage services. All proposed utilities will be placed underground.

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FIGURE 1
Regional Vicinity

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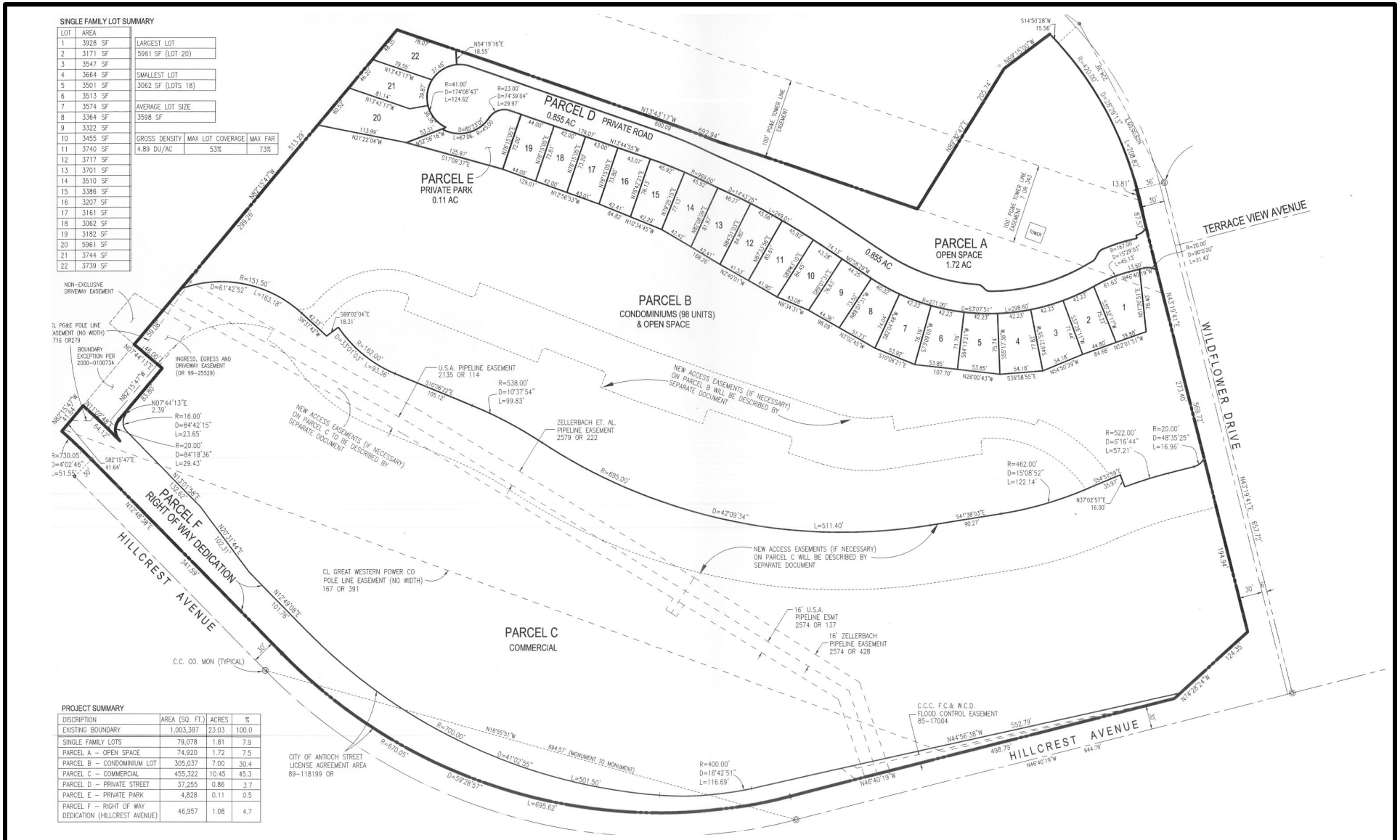

Source: Meridian Associates, Inc.; 2016

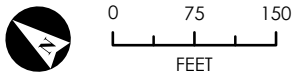

FIGURE 2
Proposed Tentative Subdivision Map

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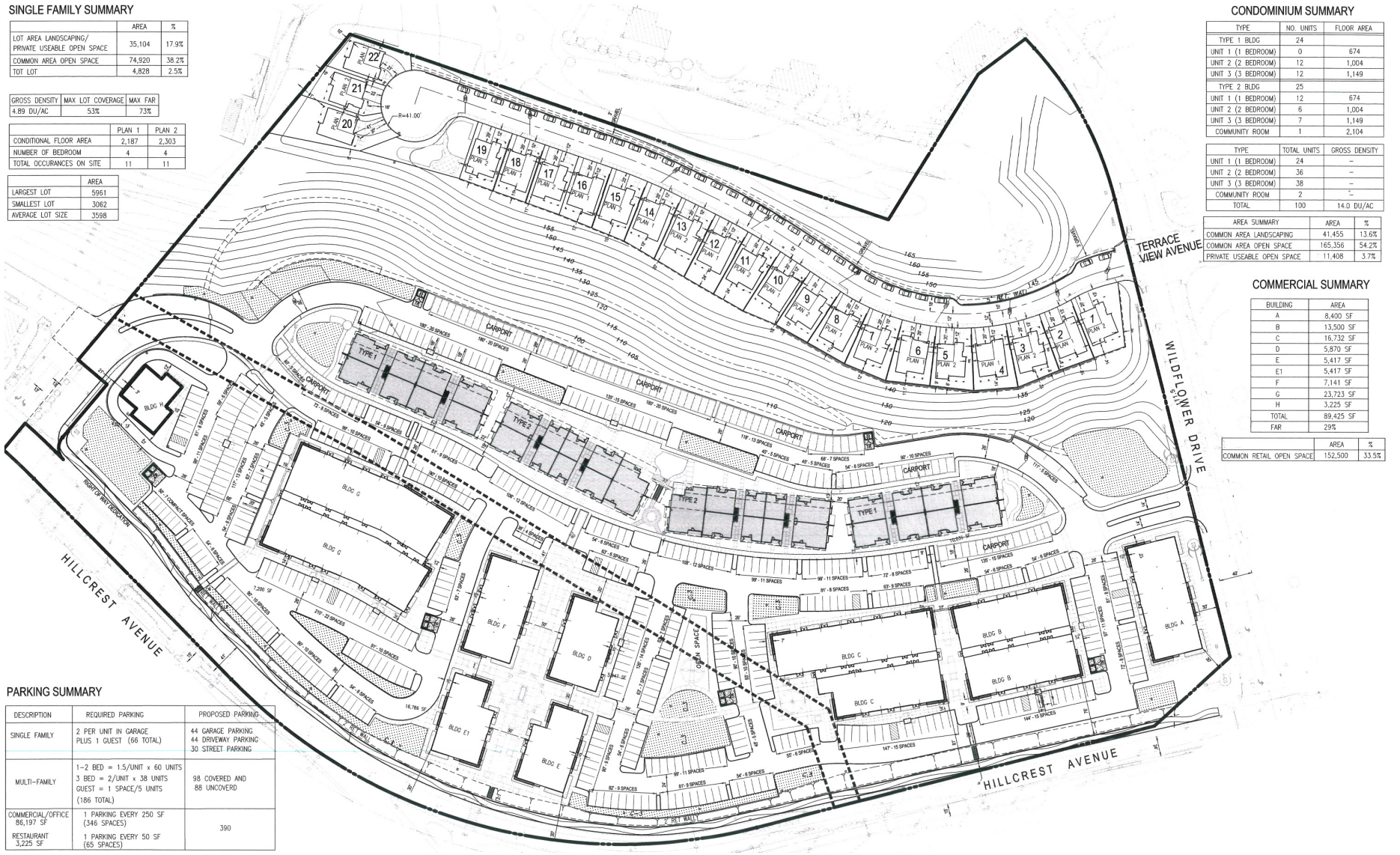

Source: Meridian Associates, Inc.; 2016

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FIGURE 3
Proposed Site Plan

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LANDSCAPING AND PUBLIC OPEN SPACE

The proposed project would feature landscaping throughout the site, including street landscaping along Hillcrest Avenue consistent with City standards, landscaping and signage at project entries and corners, and a community garden.

STORMWATER DRAINAGE

Stormwater would be diverted through landscape features and bioretention facilities or basins, which would treat runoff through detention and infiltration in soil media prior to being collected in a sub-drain and conveyed to the city's storm drain system. Six bioretention basins are proposed to extend north and south along the slope.

REGULATORY REQUIREMENTS, PERMITS, AND APPROVALS

CITY OF ANTIOCH

The following approvals are being requested.

- Approval of Vesting Tentative Map
- General Plan Amendment and zoning change
- Approval of a Use Permit
- Design Review approval
- Certification of Initial Study/Mitigated Negative Declaration and adoption of Mitigation Monitoring and Reporting Program

OTHER GOVERNMENT AGENCY APPROVALS

The City of Antioch is the lead agency for the proposed project. Responsible and trustee agencies may include, but are not limited to:

- Bay Area Air Quality Management District
- California Department of Fish and Wildlife
- San Francisco Bay Regional Water Quality Control Board
- US Army Corps of Engineers

B. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages. Potentially significant impacts that are mitigated to "Less Than Significant" with mitigation identified in this Initial Study are shown here.

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

C. DETERMINATION (to be completed by the lead agency)

On the basis of this initial evaluation:

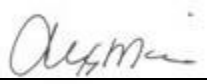
☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ 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 project proponent. 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" impact 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 or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Signature

9/11/2017
Date

Alexis Morris
Printed Name

Planning Manager
Title

D. EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources cited following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made and feasible mitigation is not identified, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less Than Significant With Mitigation Measures Incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) The significance criteria or threshold, if any, used to evaluate each question; and

   b) The mitigation measure identified, if any, to reduce the impact to less than significant.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
1. AESTHETICS. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

DISCUSSION OF IMPACTS

a) **Less Than Significant Impact**. The City of Antioch General Plan Community Image and Design Element establishes that views of Mount Diablo, ridgelines, and the San Joaquin River from locations that are accessible to the public are important visual resources in the city (Antioch 2003a). The project site is a west-facing slope on the side of a small ridge that is partially developed with residential uses on its eastern slope. Mount Diablo is visible to the southwest from public streets that provide access to residences on the ridge adjoining the project site on the east (Lotus Court and Lobelia Court).

The project would not result in development on the existing ridgeline, but single-family residences would be constructed near the top of the slope. The existing houses on the eastern side of the ridge are at an elevation of approximately 150 feet. There is a rise in elevation to approximately 165 feet at the top of the ridge. The proposed single-family residential building pads would be formed on the western slope below the ridge at elevations ranging between 130 and 160 feet. Due to the rise in elevation between the existing and the proposed houses, the proposed development would not be clearly visible from the existing houses or public roadways to the east and would not obstruct existing long-range views of Mount Diablo and the horizon to the south. This impact would be less than significant.

b) **No Impact**. State Route (SR) 4, which runs north to south along the city's eastern border, is the only designated state scenic highway in Antioch (Caltrans 2011). The project site is located on the city's northern border, less than one-half mile south of SR 4. The project site is not visible from SR 4, but it is visible from the Hillcrest Avenue overcrossing at SR 4, although views are dominated by high-voltage electric transmission towers in the immediate vicinity. Views of the site from the Hillcrest Avenue overcrossing are partially obscured by existing commercial development in the foreground. SR 160 is an Eligible State Scenic Highway–Not Officially Designated and is located approximately 1.5 miles northeast of the project site, but the project site is not visible from SR 160. Direct views of the project site are not available from either of these two roadways. Because the project site is not located in the vicinity of any scenic vistas, as described by the General Plan Update EIR (Antioch 2003b), or a state scenic highway, there would be no impact.

c) **Less Than Significant Impact**. The project site is an undeveloped hillside covered with low grasses and a few scattered shrubs and trees. A high-power electric transmission line crosses the site along its eastern boundary near the top of the ridge. Rooflines of some existing houses east of the site are also visible over the peak of the ridge. The site is surrounded by urban development and lacks distinctive visual resources (i.e., mature trees, rock outcroppings, watercourses, and historic buildings), making its overall visual quality low.

The project proposes to develop the site with commercial, multi-family, and single-family residential uses as well as parking areas, roads and driveways, utilities, fencing, and landscaping. Such development would fundamentally change the existing visual character of the site from undeveloped grassland to urban development dominated by large, multistory structures, roads and parking areas with vehicles, lighting, fencing, and ornamental landscaping.

The existing houses east of the site along Wildflower Drive and associated cul-de-sacs are located on the east side of the ridge and are set back from and lower than its peak. Thus, views from these houses extend over the project site to long-range views of Mount Diablo in the distance. Views of the site from Hillcrest Avenue on the north, west, and south are dominated by the hillside and three transmission line towers. Land uses in these areas include single-family residential and commercial retail. Thus, the proposed development would be an extension of the existing urban landscape and would be considered expected and appropriate.

According to Antioch Municipal Code Section 9-5.2607, the project would be subject to design review by the City. The purpose of the design review process is to promote the city's orderly development, encourage high quality site design and planning, protect the stability of land values and investments, and ensure consistency with the Citywide Design Guidelines. The design review process would ensure that the proposed development is of high visual quality and visually harmonious with the surrounding area.

While the project site is highly visible from the north, west, and south and the proposed development would substantially change the site's existing visual character, this change would be compatible with the surrounding visual character of the area and would not degrade the visual quality of the site. Therefore, this impact would be less than significant.

d) **Less Than Significant Impact**. The project site is vacant with no existing light sources. Upon completion of the project, shopping center parking areas, streets within the development, and building exteriors would be new sources of nighttime lighting that would be visible from roadways and surrounding residential and nonresidential areas. The project would add to the existing lighting levels in the project vicinity, but it would not be incongruous with existing lighting both in terms of sources and types of light.

A photometric analysis prepared for the project illustrates where parking lot and street lights are proposed, the amount of light (in foot-candles) that would be generated by those features, and how far the light from each fixture would extend. The proposed lighting has been designed to prevent light spillover into residential areas on the north, east, and south. Although some light would extend onto Hillcrest Avenue, it would not extend into the southbound lanes, which border residential uses on the west. Therefore, lighting generated by the proposed development would not adversely affect any of the sensitive receptors surrounding the site.

In addition to light, glare could be created by the proposed development from vehicle windshields in the shopping center parking lots and building exteriors. The City's Design Guidelines require all lighting to be shielded to minimize glare and prohibit the use of mirrored and reflective glass in building materials or finishes. In addition, the City's Municipal Code Section 9-5.1003 establishes minimum standards for landscaping in and around parking areas to ensure an immediate landscaping and screening effect and a minimum of 75 percent coverage at maturity. Dense landscaping would help to shield surrounding uses from potential windshield glare.

Compliance with these existing City regulations on lighting fixtures, reflective building materials, and landscaping would minimize potential light and glare effects on surrounding sensitive receptors. Therefore, this impact would be less than significant.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
2. AGRICULTURE AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forestland, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
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 nonagricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forestland (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))?	☐	☐	☐	☒
d) Result in the loss of forestland or conversion of forestland to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to nonagricultural use or conversion of forestland to non-forest use?	☐	☐	☐	☒

DISCUSSION OF IMPACTS

a–e) **No Impact**. The project site is designated Urban and Built-Up Land (DOC 2014) and is surrounded by urban development. The project site is vacant grassland and does not contain any forestry resources. The proposed project would have no potential to affect agricultural or forestry resources. Therefore, the project would have no impact.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
3. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

DISCUSSION OF IMPACTS

SETTING

Air quality in a region is determined by the region's topography, meteorology, and existing air pollutant sources. These factors are discussed below, along with the current regulatory structure that applies to the San Francisco Bay Area Air Basin (SFBAAB), which encompasses the project site, pursuant to the regulatory authority of the Bay Area Air Quality Management District (BAAQMD).

Air Basin Characteristics

San Francisco Bay Area Air Basin

The SFBAAB comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma County, and the southwestern portion of Solano County. There are 11 climatological subregions with the SFBAAB. The project site is located in the City of Antioch in the Carquinez Strait subregion.

The Carquinez Strait runs from Rodeo to Martinez. It is the only sea-level gap between San Francisco Bay and the Central Valley. The subregion includes the lowlands bordering the strait to the north and south, and includes the area adjoining Suisun Bay and the western part of the Sacramento-San Joaquin Delta as far east as Bethel Island. The subregion extends from Rodeo in the southwest and Vallejo in the northwest to Fairfield on the northeast and Brentwood on the southeast.

Prevailing winds are from the west in the Carquinez Strait. During the summer and fall months, high pressure offshore coupled with low pressure in the Central Valley causes marine air to flow eastward through the Carquinez Strait. The wind is strongest in the afternoon. Afternoon wind speeds of 15 to 20 mph are common throughout the strait region. Annual average wind speeds are 8 mph in Martinez, and 9 to 10 mph further east. Sometimes atmospheric conditions cause air to flow from the east. East winds usually contain more pollutants than the cleaner marine air from the west. In the summer and fall months, this can cause elevated pollutant levels to move into the central Bay Area through the strait. These high-pressure periods are usually accompanied by low wind speeds, shallow mixing depths, higher temperatures and little or no rainfall.

Summer mean maximum temperatures reach about 90° F. in the subregion. Mean minimum temperatures in the winter are in the high 30s. Temperature extremes are especially pronounced in sheltered areas farther from the moderating effects of the strait itself, e.g. at Fairfield. Many industrial facilities with significant air pollutant emissions — e.g., chemical plants and refineries — are located within the Carquinez Strait Region. The pollution potential of this area is often moderated by high wind speeds. However, upsets at industrial facilities can lead to short-term pollution episodes, and emissions of unpleasant odors may occur anytime. Receptors downwind of these facilities could suffer more long-term exposure to air contaminants than individuals elsewhere. Consequently, it is important that local governments and other Lead Agencies maintain buffers zones around sources of air pollution sufficient to avoid adverse health and nuisance impacts on nearby receptors. Areas of the subregion that are traversed by major roadways, e.g. State Route 4, may also be subject to higher local concentrations of carbon monoxide and particulate matter, as well as certain toxic air contaminants such as benzene (BAAQMD 2017a).

Pollution Potential Related to Emissions

Although air pollution potential is strongly influenced by climate and topography, the air pollution that occurs in a location also depends on the amount of air pollutant emissions in the surrounding area or those that have been transported from more distant places. Air pollutant emissions generally are highest in areas that have high population densities, high motor vehicle use, and/or industrialization. Contaminants created by photochemical processes in the atmosphere, such as ozone, may result in high concentrations many miles downwind from the sources of their precursor chemicals (BAAQMD 2017a).

Criteria Air Pollutants

Air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. These regulated air pollutants are known as criteria air pollutants and are categorized into primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxide (NO_X), sulfur dioxide (SO_2), coarse particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$), lead, and fugitive dust are primary air pollutants. Of these, CO, SO_2, PM_{10}, and $PM_{2.5}$ are criteria pollutants. ROG and NO_X are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants. Presented in **Table 3-1** is a description of each of the primary and secondary criteria air pollutants and their known health effects.

TABLE 3-1
CRITERIA AIR POLLUTANTS – SUMMARY OF COMMON SOURCES AND EFFECTS

Pollutant	Major Man-Made Sources	Human Health & Welfare Effects
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, effecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO_2)	A reddish-brown gas formed during fuel combustion for motor vehicles, energy utilities and industrial sources.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Contributes to nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Ozone (O_3)	Formed by a chemical reaction between reactive organic gases (ROGs) and nitrous oxides (NOx) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, solvents, paints and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield.
Particulate Matter (PM_{10} & $PM_{2.5}$)	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Sulfur Dioxide (SO_2)	A colorless, nonflammable gas formed when fuel containing sulfur is burned. Examples are refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, can damage marble, iron and steel; damage crops and natural vegetation. Impairs visibility.

Source: CAPCOA 2011

Ambient Air Quality

The US Environmental Protection Agency (EPA) and the State of California have established health-based ambient air quality standards (CAAQS) for the criteria pollutants described above, as well as for lead, sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Air quality standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Areas with air quality that exceed adopted air quality standards are designated as nonattainment areas for the relevant air pollutants, while areas that comply with air quality standards are designated as attainment areas for the relevant air pollutants. The SFBAAB's current attainment status with regard to federal and state ambient air quality standards is summarized in **Table 3-2**. The region is nonattainment for federal O_3 and $PM_{2.5}$ standards, as well as for state O_3, PM_{10}, and $PM_{2.5}$ standards (BAAQMD 2017a).

TABLE 3-2
FEDERAL AND STATE AMBIENT AIR QUALITY ATTAINMENT STATUS FOR THE SAN FRANCISCO BAY AREA AIR BASIN

Pollutant	Averaging Time	California Standards		National Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone (O_3)	8 Hours	0.070 ppm (137$\mu g/m^3$)	N	0.070 ppm	N
	1 Hour	0.09 ppm (180 $\mu g/m^3$)	N	No standard	Not applicable
Carbon Monoxide (CO)	8 Hours	9.0 ppm (10 mg/m^3)	A	9 ppm (10 mg/m^3)	A
	1 Hour	20 ppm (23 mg/m^3)	A	35 ppm (40 mg/m^3)	A
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 $\mu g/m^3$)	A	0.100 ppm	U
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)		0.053 ppm (100 $\mu g/m^3$)	A
Sulfur Dioxide (SO_2)	24 Hours	0.04 ppm (105 $\mu g/m^3$)	A	0.14 ppm (365/$\mu g/m^3$)	—
	1 Hour	0.25 ppm (665 $\mu g/m^3$)	A	0.075 ppm (196/$\mu g/m^3$)	—
	Annual Arithmetic Mean			0.030 ppm (80/$\mu g/m^3$)	—
Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 $\mu g/m^3$	N	No standard	Not applicable
	24 Hours	50 $\mu g/m^3$	N	150 $\mu g/m^3$	U
Particulate Matter – Fine ($PM_{2.5}$)	Annual Arithmetic Mean	12 $\mu g/m^3$	N	15 $\mu g/m^3$	A
	24 Hours			35 $\mu g/m^3$	N
Sulfates	24 Hours	25 $\mu g/m^3$	A	—	—
Lead	30-Day Average	1.5 $\mu g/m^3$		—	A
	Calendar Quarter	—	—	1.5 $\mu g/m^3$	A
	Rolling 3-Month Average	—	—	0.15 $\mu g/m^3$	—
Hydrogen Sulfide	1 Hour	0.03 ppm (42 $\mu g/m^3$)	U	—	—
Vinyl Chloride (chloroethene)	24 Hours	0.01 ppm (26 $\mu g/m^3$)	No information available	—	—
Visibility-Reducing Particles	8 Hours (10:00 to 18:00 PST)	—	U	—	—

Source: BAAQMD 2017a

Notes: A = attainment; N = nonattainment; U = unclassified; mg/m3 = milligrams per cubic meter; ppm = parts per million; ppb = parts per billion; µg/m3 = micrograms per cubic meter.

Based on the nonattainment status, O_3, PM_{10}, and $PM_{2.5}$ are the pollutants most intensely affecting the SFBAAB. Ambient concentrations of these pollutants at specific sites will vary due to localized variations in emission sources and climate. Concentrations near the project site can be inferred from ambient air quality measurements conducted by the BAAQMD at nearby air quality monitoring stations. The Bethel Island Road air quality monitoring station is the closest station to the project site, approximately 7.5 miles to the east. **Table 3-3** summarizes the published data since 2014 from the Bethel Island Road air quality monitoring station for each year that monitoring data is provided.

TABLE 3-3
SUMMARY OF AMBIENT AIR QUALITY DATA

Pollutant Standards	2014	2015	2016
Ozone			
Max 1-hour concentration (ppm) state	0.092	0.080	0.089
Number of days above state 1-hour standard	0	0	0
Max 8-hour concentration (ppm) state	0.071	0.072	0.081
Number of days above state 8-hour standard (0.070 ppm)	1	2	2
Max 8-hour concentration (ppm) federal	0.071	0.072	0.080
Number of days above federal 8-hour 2015 standard (0.070 ppm)	1	1	2
Respirable Particulate Matter (PM_{10})			
Max 24-hour concentration ($\mu g/m^3$) state	61.3	33.0	26.0
Estimated number of days above state standard	13	0	0
Max 24-hour concentration ($\mu g/m^3$) federal	57.8	31.1	25.5
Estimated number of days above federal standard	0	0	0
Fine Particulate Matter (PM2.5)			
Max 24-hour concentration ($\mu g/m^3$)	*	*	*
Number of days above standard	*	*	*

Source: CARB 2017

*Notes: µg/m3 = micrograms per cubic meter; ppm = parts per million; * = No data is currently available from CARB to determine the value.*

Air Quality Attainment Plan

The BAAQMD is responsible for preparing plans to attain ambient air quality standards in the San Francisco Bay Area Air Basin. The BAAQMD prepares ozone attainment plans for the national ozone standard and clean air plans for the California standard, both in coordination with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG).

With respect to applicable air quality plans, the BAAQMD adopted the Bay Area 2017 Clean Air Plan in April 2017. The 2017 Clean Air Plan addresses nonattainment of the national 1-hour ozone standard in the SFBAAB. The BAAQMD Bay Area 2017 Clean Air Plan establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving state (California) and national air quality standards. The Clean Air Plan's pollutant control strategies are based on the latest scientific and technical information and planning assumptions, updated emission inventory methodologies for various source categories, and the latest population growth projections and vehicle miles traveled (VMT) projections for the region. The Clean Air Plan defines a control strategy that the BAAQMD and its partners will implement to (1) reduce emissions and decrease ambient concentrations of harmful pollutants; (2) safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily impacted by air pollution; and (3) reduce greenhouse gas emissions to protect the climate. It is important to note that in addition to updating the previously prepared ozone plan, the Clean Air Plan also serves as a multipollutant plan to protect public health and the climate. In

its dual role as an update to the state ozone plan and a multipollutant plan, the Bay Area 2017 Clean Air Plan addresses four categories of pollutants (BAAQMD 2017b):

- Ground-level ozone and its key precursors, ROG and NOx
- Particulate matter: primary PM2.5, as well as precursors to secondary PM2.5
- Air toxics
- Greenhouse gases

The Clean Air Plan provides local guidance for the State Implementation Plan, which includes the framework for air quality basins to achieve attainment of the state and federal ambient air quality standards.

Toxic Air Contaminants

In addition to the criteria air pollutants listed above, another group of pollutants, commonly referred to as toxic air contaminants (TACs) or hazardous air pollutants, can result in health effects that can be quite severe. The California Air Resources Board (CARB) has designated 244 compounds as TACs. Many TACs are confirmed or suspected carcinogens, or are known or suspected to cause birth defects or neurological damage. Secondly, many TACs can be toxic at very low concentrations. For some chemicals, such as carcinogens, there are no thresholds below which exposure can be considered risk-free.

Industrial facilities and mobile sources are significant sources of TACs. However, common urban facilities also produce TAC emissions, such as gasoline stations (benzene), hospitals (ethylene oxide), and dry cleaners (perchloroethylene). Automobile exhaust also contains TACs such as benzene and 1,3-butadiene. In addition, diesel particulate matter (diesel PM) is a TAC. Diesel PM differs from other toxic air contaminants in that it is not a single substance but rather a complex mixture of hundreds of substances. BAAQMD research indicates that mobile-source emissions of diesel PM, benzene, and 1,3-butadiene represent a substantial portion of the ambient background risk from toxic air contaminants in the SFBAAB (BAAQMD 2014).

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others because of the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases (OEHHA 2007).

Residential areas are considered to be sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation.

The closest sensitive receptors to the project site are single-family residences adjacent to the project site and nearby residential neighborhoods. On the north side of the project site, single-family homes on Lotus Court adjoin the project property line. On the east side of the project site, single-family residences on Wildflower Drive and Lobelia Court are 30 to 50 feet from the property line across open space. To the southeast there are single-family homes across Wildflower Drive, and to the west there are single-family homes across Hillcrest Avenue.

Odors

The land uses identified by the BAAQMD as sources of odors include wastewater treatment plants, wastewater pumping facilities, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing and fiberglass manufacturing facilities, painting/coating operations, rendering plants, coffee roasters, food processing facilities, confined animal facilities, feedlots, dairies, green waste and recycling operations, and metal smelting plants. If a source of odors is proposed to be located near existing or planned sensitive receptors, this could have the potential to cause operational-related odor impacts. With respect to operational impacts, the BAAQMD recommends screening criteria based on the distance between the receptor and the types of sources known to generate odors. None of these potential odor sources is within the vicinity of the project site.

DISCUSSION OF IMPACTS

a) Less Than Significant Impact.

The applicable air quality plan is the BAAQMD 2017 Clean Air Plan. Criteria for determining consistency with the Clean Air Plan are defined by the following indicators:

- Consistency Criterion No. 1: The project supports the primary goals of the Clean Air Plan.
- Consistency Criterion No. 2: The project conforms to applicable control measures from the Clean Air Plan and does not disrupt or hinder the implementation of any Clean Air Plan control measures.

The primary goals to which Consistency Criterion No. 1 refer are compliance with the state (California) and national ambient air quality standards. As shown in **Table 3-4**, the project would not exceed the short-term construction emission thresholds with the implementation of mitigation and would not violate air quality standards during construction. The project would also not exceed the long-term operational emission thresholds and would not violate air quality standards during project operation (**Table 3-6**). Thus, the project would not conflict with Criterion No.1.

Concerning Consistency Criterion No. 2, BAAQMD air quality planning control measures are developed, in part, based on the emissions inventories contained in the Clean Air Plan, which are derived from projected population growth and VMT for the region. These inventories are largely based on the predicted growth identified in regional and community general plans, including associated development projects. Projects that result in an increase in population or employment growth beyond that identified in regional or community plans could result in increases in VMT and subsequently increase mobile source emissions. These increases would not have been accounted for in the BAAQMD's air quality plans, making the projects inconsistent with the Clean Air Plan.

The project site is an approximately 23-acre vacant parcel in the City of Antioch. The proposed project's commercial retail and single-family residential components are consistent with the current land use designation of Neighborhood Commercial, Low Density Residential. The proposed project seeks a General Plan Amendment to designate the land use as Neighborhood Commercial, High Density Residential to accommodate multi-family uses in addition to single-family uses. As discussed in subsection 13(b), below, under the current land use designations, the project site could be developed with up to 92 dwelling units and 375,836 square feet of commercial space. The project proposes to

construct 120 dwelling units and 89,425 square feet of commercial space. While the project proposes more dwelling units than assumed in the General Plan, it also proposes significantly less square feet of commercial space. This would result in overall building intensity and associated population growth similar to that allowed under the General Plan and evaluated in the General Plan EIR. Therefore, because the proposed development intensity and anticipated population increase would be within the growth projections assumed in the General Plan, it would not hinder implementation of the Clean Air Plan.

As required by the Sustainable Communities and Climate Protection Act of 2008 (SB 375), the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) have developed a Sustainable Community Strategy (SCS) plan as a component of the Plan Bay Area 2013 – 2040 (Plan Bay Area 2013). This plan seeks to reduce greenhouse gas (GHG) and other mobile source emissions through coordinated transportation and land use planning to reduce VMT.

A component of the SCS plan is to focus higher density residential and mixed-use development in Transportation Priority Project (TPP) areas. The area within a 0.5-mile radius of the Antioch eBART station has been designated a TPP area. More than 75 percent of the project site is within this TPP area. The inclusion of multi-family and single-family residential components in the project help to achieve the SCS plan's VMT reduction goals. In addition, the retail component of the project would serve the needs of the project's residents, neighboring residents within 1 to 3 miles, and motorists on the SR-4 corridor, further reducing VMT in the City and the region. Therefore, the project would not conflict with or obstruct implementation of the 2017 Clean Air Plan, and this impact would be less than significant.

b, c) ***Less Than Significant Impact with Mitigation.*** The BAAQMD has developed project-level thresholds of significance to provide a conservative indication of whether a proposed project could result in potentially significant air quality impacts. To meet the project-level threshold of significance for construction-related criteria air pollutant and precursor impacts, the proposed project must emit no more than 54 pounds per day (lbs/day) of reactive organic gases (ROG), nitrogen oxides (NOx), and/or exhaust-related $PM_{2.5}$, and no more than 82 lbs/day of exhaust-related PM_{10}. Concerning fugitive dust-related $PM_{2.5}$ and PM_{10} emissions generated during construction, the BAAQMD states that implementation of its Basic Construction Mitigation Measures is necessary to reduce such emissions to a level that is considered less than significant. For operational-related criteria air pollutant and precursor impacts, the proposed project must emit no more than 54 lbs/day of ROG, NOx, and/or $PM_{2.5}$ and no more than 82 lbs/day of PM_{10} to be considered less than significant.

Construction-Generated Emissions

The project would generate short-term emissions from construction activities such as site grading, asphalt paving, building construction, and architectural coatings (e.g., painting). Common construction emissions include fugitive dust from soil disturbance, fuel combustion from mobile heavy-duty diesel- and gasoline-powered equipment, portable auxiliary equipment, and worker commute trips. During construction, fugitive dust, the dominant source of PM_{10} and $PM_{2.5}$ emissions, would be generated when wheels or blades disturb surface materials. Uncontrolled dust from construction can become a nuisance and potential health hazard to those living and working nearby. Demolition can also

generate PM_{10} and $PM_{2.5}$ emissions. Off-road construction equipment is often diesel-powered and can be a substantial source of NOx emissions, in addition to PM_{10} and $PM_{2.5}$ emissions. Worker commute trips and architectural coatings are dominant sources of ROG emissions.

Predicted maximum daily unmitigated construction-generated emissions for the project are summarized in **Table 4.3-4**. The construction of all components of the project (single-family residential, multi-family residential, and retail/commercial) are assumed to occur simultaneously and would not be phased. The construction of the project is assumed to take a maximum of 18 months and commence in May 2018. As shown in **Table 4.3-4**, construction-generated criteria pollutant emissions of NO_x are predicted to exceed their respective BAAQMD significance thresholds.

Table 3-4
Construction-Related Criteria Pollutant and Precursor Emissions – Unmitigated
(Maximum Pounds per Day)

Construction Activities	ROG	NO_x	Exhaust PM_{10}	Exhaust $PM_{2.5}$	Fugitive Dust PM_{10}	Fugitive Dust $PM_{2.5}$
2018 maximum daily emissions	5.2	59.6	2.6	2.4	18.2	10.0
2019 maximum daily emissions	53.2	29.9	1.4	1.4	2.0	0.5
Maximum Daily Emissions of All Years of Construction	*53.2*	***59.6***	*2.6*	*2.4*	*18.2*	*10.0*
BAAQMD Potentially Significant Impact Threshold	54	54	82	54	Basic Construction Mitigation Measures	Basic Construction Mitigation Measures
Exceed BAAQMD Threshold?	**No**	**Yes**	**No**	**No**	**No**	**No**

Source: CalEEMod version 2016.3.1. See Appendix AQ for emission model outputs.

Notes: Project construction activities are assumed to occur over an 18-month period.

The generation of NO_x is predicted to have peak daily emissions of 59.6 pounds per day, above the threshold of 54 pounds per day. The generation of NO_x during construction is primarily the result of operating diesel powered equipment. Grading activities typically involve the use of large diesel powered equipment for extended periods. The intensity of daily grading activities account for most of the NO_x generated on peak construction days. The Environmental Protection Agency (EPA) enacted the first federal standards (Tier 1) for new off-road diesel engines in 1994. In 1998, the EPA enacted more stringent Tier 2 and Tier 3 standards for all equipment with phase-in schedules from 2000 to 2008. As a result, all off-road, diesel-fueled construction equipment manufactured in 2006 or later has been manufactured to Tier 3 standards. Mitigation measure **MM 3-1** would require all off-road diesel powered equipment used for grading or excavation activities to be CARB Tier 3-certified or better.

While unmitigated construction activities would not exceed any of the $PM_{2.5}$ or PM_{10} thresholds, the BAAQMD requires implementation of the Basic Construction Mitigation Measures listed in **Table 3-5** as mitigation for dust and exhaust construction impacts for all projects.

TABLE 3-5
BAAQMD BASIC CONSTRUCTION MITIGATION MEASURES

BAAQMD Basic Construction Mitigation Measures	
1.	All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2.	All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3.	All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4.	All vehicle speeds on unpaved roads shall be limited to 15 mph.
5.	All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6.	Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations). Clear signage shall be provided for construction workers at all access points.
7.	All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
8.	Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The air district's phone number shall also be visible to ensure compliance with applicable regulations.

Source: BAAQMD 2017a

Implementation of mitigation measures **MM 3-1** and the BAAQMD Basic Construction Mitigation Measures would result in the predicted construction-generated criteria pollutant and precursor emissions shown in **Table 3-6**. As shown, all estimated construction-generated criteria pollutant and precursor emissions would be below the BAAQMD significance thresholds for NO_x. Therefore, construction-generated emissions impacts would be less than significant with mitigation.

TABLE 3-6
CONSTRUCTION-RELATED CRITERIA POLLUTANT AND PRECURSOR EMISSIONS – MITIGATED
(MAXIMUM POUNDS PER DAY)

Construction Activities	ROG	NO_x	Exhaust PM_{10}	Exhaust $PM_{2.5}$	Fugitive Dust PM_{10}	Fugitive Dust $PM_{2.5}$
Year 2018 maximum daily emissions	3.2	30.0	1.4	1.3	8.3	4.5
Year 2019 maximum daily emissions	52.8	28.4	1.4	1.3	2.0	0.5
Maximum Daily Emissions of All Years of Construction	*52.8*	*30.0*	*1.4*	*1.3*	*8.3*	*4.5*
BAAQMD Potentially Significant Impact Threshold	54	54	82	54	Basic Construction Mitigation Measures	Basic Construction Mitigation Measures
Exceed BAAQMD Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

*Source: CalEEMod version 2016.3.1. See **Appendix AQ** for emission model outputs.*

*Notes: Project construction activities are assumed to occur over an 18-month period. Emissions estimates account for the quantifiable components of the BAAQMD's Basic Construction Mitigation Measures, specifically, watering unpaved potions of the construction site twice daily and limiting off-road equipment to speeds of 15 mph. Emissions estimates assume implementation of mitigation measure **MM 3-1.***

Operational Emissions

The project would result in long-term operational emissions of criteria air pollutants and ozone precursors (i.e., ROG and NOx). Project-generated increases in emissions would be predominantly associated with motor vehicle use, energy required for commercial and residential building operations, energy used due to from water consumption, energy used in solid waste collection and disposal, and area sources such hearths and use of landscaping equipment. Long-term operational emissions are summarized in **Table 3-7.** The estimated emissions account for the BAAQMD Regulation 6, Rule 3: no wood burning devices are allowed to be installed in a new building construction (BAAQMD 2015). The emissions model also accounts for project characteristics that reduce VMT per CAPCOA greenhouse gas reduction measures: LUT-3 Increased Diversity of Urban and Suburban Developments (mixed-use); LUT-5 Land Use/Location – reduced distance to transit; and SDT-1 Neighborhood/Site Improvements – provide pedestrian network improvements (CAPCOA 2010). As shown, all criteria pollutant emissions would remain below BAAQMD significance thresholds. Therefore, impacts due to long-term operational emissions would be less than significant and would not be cumulatively considerable.

TABLE 3-7
LONG-TERM OPERATIONAL EMISSIONS

Source	Emissions			
	ROG	NO_x	PM_{10}	$PM_{2.5}$
Summer Emissions (Pounds per Day)				
Area	5.3	1.0	0.1	0.1
Energy	0.1	0.5	0.04	0.04
Mobile	7.1	20.1	8.6	2.4
Total	**12.4**	**22.4**	**8.8**	**2.5**
Winter Emissions (Pounds per Day)				
Area	5.3	1.0	0.1	0.1
Energy	0.1	0.5	0.04	0.04
Mobile	5.7	21.6	8.6	2.4
Total	**11.0**	**23.1**	**8.8**	**2.5**
BAAQMD Potentially Significant Impact Threshold (Daily Emissions)	54	54	82	54
Exceed BAAQMD Daily Threshold?	**No**	**No**	**No**	**No**
Annual Emissions (Tons per Year)				
Proposed Project	1.9	3.7	1.4	0.4
BAAQMD Potentially Significant Impact Threshold (Annual Emissions)	10	10	15	10
Exceed BAAQMD Annual Threshold?	**No**	**No**	**No**	**No**

*Source: CalEEMod version 2016.3. See **Appendix AQ** for emission model outputs.*

Note: Emissions estimates account for the BAAQMD Regulation 6, Rule 3: no wood burning devices are allowed to be installed in a new building construction. VMT reductions are taken for land use diversity (CAPCOA LUT-3), reduced transit distance (CAPCOA LUT-5), and project site enhancements: pedestrian network improvements (CAPCOA SDT-1).

d) Less Than Significant Impact.

Toxic Air Contaminants Generated During Construction Activities

The closest sensitive receptors to the project site are single-family residences adjacent to the project site and nearby residential neighborhoods. On the north side of the project, single-family homes on Lotus Court adjoin the project property line. On the east side of the project, single-family residences on Wildflower Drive and Lobelia Court are 30 to 50 feet from the property line across open space. To the southeast there are single-family homes across Wildflower Drive, and to the west there are single-family homes across Hillcrest Avenue.

Construction of the proposed project would result in the generation of diesel PM emissions from the use of off-road diesel equipment required for site grading and excavation, paving, and other construction activities. Health-related risks associated with diesel-exhaust emissions are primarily linked to long-term exposure and the associated risk of contracting cancer. The amount to which the receptors could be exposed, which is a

function of concentration and duration of exposure, is the primary factor used to determine health risk (i.e., potential exposure to toxic air contaminants (TACs) emission levels that exceed applicable standards). Concentrations of mobile-source diesel PM emissions are typically reduced by 70 percent at a distance of approximately 500 feet (CARB 2005). In addition, current models and methodologies for conducting health risk assessments are associated with longer-term exposure periods of 9, 40, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities. Construction of the proposed project is anticipated to be completed within 2 years.

According to the BAAQMD (2017a), construction-generated diesel PM emissions contribute to negative health impacts when construction is extended over lengthy periods of time. The use of diesel-powered construction equipment during construction would be temporary and episodic and would not be concentrated in areas closest to sensitive receptors. The implementation of mitigation measure **MM 3-1** to require that all off-road diesel powered equipment used in grading or excavating activities shall be CARB Tier 3 certified or better would reduce construction-generated diesel PM emissions. Furthermore, all construction activities would be subject to and would comply with California regulations limiting idling to no more than 5 minutes, which would further reduce nearby sensitive receptors exposure to temporary and variable diesel PM emissions. For these reasons and because diesel fumes disperse rapidly over relatively short distances, diesel PM generated by most construction activities, in and of itself, would not be expected to create conditions where the probability of contracting cancer is greater than 10 in one million for nearby receptors. Also, the BAAQMD requires implementation of basic construction mitigation measures (see **Table 3-5**). These basic construction mitigation measures include actions that would substantially reduce nuisance fugitive dust. Therefore, the impact on community health risks from TACS due to project construction activities would be less than significant.

Toxic Air Contaminants Generated During Project Operations

The proposed project would not site any new TAC sources. While the project would add a small amount of car and light truck traffic to SR-4 and Hillcrest Avenue, it would not contribute significantly to existing diesel PM concentrations. Therefore, the project would not exacerbate existing conditions.

The BAAQMD's Planning Healthy Places provides guidance on evaluating the significance of existing sources of TACs and mitigating the effects those sources on new sensitive receptors associated with operation of a project (BAAQMD 2016). The BAAQMD Planning Healthy Place website provides interactive maps that show areas that are estimated to have elevated levels of $PM_{2.5}$ and/or TACs (BAAQMD 2017c). The interactive map identifies four fuel stations with areas of potential elevated TACs near the project site, but none of those areas extends into the project site. SR-4 is located approximately 1,000 feet north of the project site. The interactive map identifies an area alongSR-4 as having the potential for elevated $PM_{2.5}$ levels, but the area does not extend to the project site. Hillcrest Avenue borders the project on the south and west sides. The interactive map identifies areas of elevated $PM_{2.5}$ levels that extend approximately 200 feet from the roadway centerline into the project site, but the proposed location for residential uses in the proposed project is not within that area

The BAAQMD Planning Healthy Places guidelines provide a set of best practices to reduce exposure to local air pollution (BAAQMD 2016). The first and primary method is to plan sensitive land uses farther from localized pollution sources. In the proposed project, the residential areas would be located at least 300 feet from the centerline of Hillcrest Avenue. Another method of reducing exposure is through site design—placing buildings that do not house people between the residential areas and the source of pollution. For the proposed project, the retail portion of the project would be between Hillcrest Avenue and the residential areas and therefore consistent with this guideline.

Therefore, the impact on community health risks from TACS due to the siting of new sensitive receptors would be less than significant.

Carbon Monoxide Hot Spots

The primary mobile-source criteria pollutant of local concern is carbon monoxide (CO). Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Transport of this criteria pollutant is extremely limited; CO disperses rapidly with distance from the source under normal meteorological conditions. Under certain meteorological conditions, however, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Areas of high CO concentrations, or "hot spots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours.[1] Modeling is therefore typically conducted for intersections that are projected to operate at unacceptable levels of service during peak commute hours.

Based on BAAQMD CEQA Guidelines (BAAQMD 2017a), projects meeting all the following screening criteria would be considered to have a less than significant impact on localized carbon monoxide concentrations if:

1. The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plans, and local congestion management agency plans.

2. The project traffic would not increase traffic volumes at project-affected intersections to more than 44,000 vehicles per hour.

3. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Consistency of the project with applicable congestion management programs and plans is analyzed below in section **4.16 Traffic**. The project is consistent with all applicable congestion plans.

[1] Level of service (LOS) is a measure used by traffic engineers to determine the effectiveness of transportation infrastructure. Level of service is most commonly used to analyze intersections by categorizing traffic flow with corresponding safe driving conditions. LOS A is considered the most efficient level of service and LOS F the least efficient.

The busiest intersection potentially affected by the project is the intersection of west-bound SR4 and Hillcrest Avenue. According to the TIA prepared for the project by Abrams Associates (see **Appendix TRAF**), existing plus project peak hourly volumes at the intersection would be 5,837 vehicles, substantially less than the screening criteria of 44,000 vehicles per hour. The closest intersection with a potential for limited vertical or horizontal mixing is the highway underpass of State Route 4 (SR-4) beneath Hillcrest Avenue. According to the TIA, the project is predicted to increase the peak hourly traffic on SR-4 by less than 50 vehicles. From the peak hourly traffic volume for SR-4 reported in Caltrans state highway data (Caltrans 2015), the peak hourly traffic through the underpass is 6,300 vehicles, substantially less than the screening criteria of 24,000 vehicles per hour. Therefore, the impact on potential carbon monoxide hotspots would be less than significant.

e) Less Than Significant Impact.

Construction-Related Odors

The BAAQMD does not have a recommended odor threshold for construction activities. For purposes of this analysis, it is recognized that heavy-duty construction equipment would emit odors. However, construction activities would be short term and finite in nature. Furthermore, equipment exhaust odors would dissipate quickly and are common in an urban environment. For these reasons, construction-related odors associated with the project would not be anticipated to create objectionable odors affecting a substantial number of people. Impacts would be less than significant.

Operational Odors

The proposed project does not include any of the land uses that have been identified by the BAAQMD as odor sources, nor would it locate new receptors near any of these sources. Therefore, the project is not anticipated to create objectionable odors affecting a substantial number of people. This impact would be less than significant.

Mitigation Measures

MM 3-1 During construction activities, the project applicant and/or its contractor shall ensure that all off-road diesel powered equipment used in grading or excavating activities shall be CARB Tier 3 certified or better.

Timing/Implementation: *During construction activities*

Enforcement/Monitoring: *City of Antioch Planning Department*

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
4. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.), through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) 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?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

A biological resource analysis (BRA) was prepared for the proposed project (Monk & Associates 2015). The BRA included a query of available data and literature from local, state, federal, and nongovernmental agencies, as well as aerial surveys to collect site-specific data regarding habitat suitability for special-status species and to identify any potentially jurisdictional waters and site reconnaissance. The results of the BRA are presented in this section. On December 13, 2016, a Michael Baker International biologist conducted a database search and survey of the project site to confirm the accuracy of the BRA and ensure conditions had not changed since the BRA was prepared.

SUMMARY OF EXISTING CONDITIONS ON THE PROJECT SITE

The project site's elevation ranges from approximately 66 feet above sea level near the site's western portion to a maximum of approximately 168 feet above sea level on the eastern side of the project site. The eastern side of the project site is characterized by a hill with 10 to 15 percent slopes. The project site is a remnant parcel of land that was in part originally farmed but has remained undeveloped. The project site contains ruderal grassland habitat, but there is an old orchard on the flatter terrain of the project site (west side). The project site contains various trees in the old orchard and along a truncated, swale-like feature that likely functioned historically as an ephemeral drainage. However, owing to surrounding development and fills associated with surrounding developments, this swale-like feature is truncated from runoff from upstream watershed areas. Hillcrest Avenue on the west side of the project site now supports a deep storm drain line that intercepts upstream watershed contributions that may have historically flowed through this swale-like feature.

DISCUSSION OF IMPACTS

a) **Less Than Significant Impact With Mitigation Incorporated**. No special-status plants have been mapped on or adjacent to the project site, and none were found during surveys. There are, however, several special-status wildlife species with the potential to occur on the project site.[2] Construction of the proposed project would involve activities that could result in impacts on the species described below.

Swainson's Hawk

The Swainson's hawk (*Buteo swainsonii*) is a state listed threatened species; it has no federal listing. Swainson's hawks and their nests, eggs, and young are also protected under the California Fish and Game Code (Sections 3503, 3503.5, 3513, and 3800). No Swainson's hawk nests were discovered on the site or off-site in the vicinity of the project site during surveys. The project site contains marginal nesting habitat for Swainson's hawks, and the isolated location of the project site in a highly-urbanized landscape would require that Swainson's hawks fly over heavily developed areas to reach other foraging areas or fly to the project site to forage. While use of the project site for foraging by Swainson's hawks is unlikely, there is a possibility that this species may nest and forage on the project site.

If Swainson's hawk nests are present on the project site, construction activities could result in take caused by the direct mortality of adult or young birds, nest destruction, or disturbance of this species. Construction activities would also generate noise and dust, which could disturb nesting birds. This impact is potentially significant.

Mitigation measures **MM 4.1** and **MM 4.4** require preconstruction surveys to determine if Swainson's hawk nests are present, and protective measures in the event nests are found. These measures would reduce the impact to a less than significant level.

[2] Based on the results of database searches and conditions on the project site, the site was also evaluated for the potential for vernal pool fairy shrimp (*Branchinecta lynchi*), California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), silvery legless lizard (*Anniella pulchra pulchra*), and San Joaquin kit fox (*Vulpesmacrotis mutica*). The study concluded there would be no impact on these species.

Burrowing Owl

Western burrowing owl (*Athene cunicularia hypugaea*) is a California Species of Special Concern. This raptor (bird of prey) is protected under the federal Migratory Bird Treaty Act (50 CFR 10.13), and its nest, eggs, and young are protected under California Fish and Game Code Sections 3503 and 3503.5. The closest known record is 0.4 mile north of the project site. While western burrowing owls have not been observed on the project site and the likelihood of their presence on the site is considered to be low to moderate, suitable nesting habitat (e.g., California ground squirrel burrows) occurs on the project site. Even if burrowing owl individuals do not currently occupy a location, they are a mobile species and could readily establish nests prior to project construction. Grading and other ground disturbance could therefore lead to a loss of nest burrows and habitat, which would be a potentially significant impact.

Mitigation measure **MM 4.2** requires preconstruction surveys for burrowing owls and protective measures in the event burrowing owls or nests are found. This measure would reduce the impact to less than significant.

Nesting Migratory Birds and Raptors

Various migratory birds and raptor species have the potential to inhabit the project area. Swainson's hawk (discussed above), white-tailed kite (*Elanus caeruleus*), and loggerhead shrike (*Lanius ludovicianus*) are afforded additional protection by state law. The white-tailed kite is a California fully protected species. The loggerhead shrike is a species of special concern.

Some raptor and migratory bird species, such as red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*), are not considered special-status species because they are not rare or protected under the federal Endangered Species Act or the California Endangered Species Act; however, the nests of all raptor species are protected under the Migratory Bird Treaty Act (MBTA) and Section 3503.5 of the California Fish and Game Code. The nests of all migratory birds are also protected under the MBTA, which makes it illegal to destroy any active migratory bird nest. The trees on the project site provide potentially suitable nesting habitat for raptors and migratory birds. In addition, the ruderal grasslands on the project site represent potentially suitable foraging habitat for raptor species and migratory birds.

If nesting migratory birds and/or raptors are present during project construction, the proposed project may cause direct mortality through impacts to habitats that contain active nests. Excessive noise, disturbance, and vibrations can cause nesting raptors and birds to abandon their nests. The loss of active nests or direct mortality is prohibited by the MBTA and Fish and Game Code Section 3503.5. The proposed project could result in indirect impacts to migratory birds and raptors through habitat degradation and removal of trees/shrubs suitable for nesting.

Mitigation measures **MM 4.1**, **MM 4.3**, and **MM 4.4** require surveys for nesting birds prior to construction, as well as protective measures in the event nests are found. These mitigation measures would reduce the impact to less than significant.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) is a California species of special concern. The trees on the project site provide marginal roosting habitat for the western red bat. In general, the California Department of Fish and Wildlife (CDFW) is most concerned about the loss of maternity roosting sites. Bats are at their most vulnerable in roost sites during the summer, when large numbers may be gathered together and young bats, unable to fly, may be present. In addition, the ruderal grassland habitat on the project site may offer suitable foraging habitat for bat species. Removal of maternity roost sites may cause direct bat mortality. Noise and dust from construction activities could indirectly impact bat species if they are foraging during construction. This impact is potentially significant.

Mitigation measures **MM 4.5** and **MM 4.6** require construction to occur during daylight hours, surveys for bats prior to construction, and protective measures in the event bat roosts are found. These measures would reduce the impact to less than significant.

b, c) **Less Than Significant Impact With Mitigation Incorporated**. Sensitive habitats include (a) areas of special concern to resource agencies; (b) areas protected under CEQA; (c) areas designated as sensitive natural communities by the CDFW; (d) areas outlined in California Fish and Game Code Section 1600; (e) areas regulated under Clean Water Act (CWA) Section 404; and (f) areas protected under local regulations and policies. The only sensitive natural communities on the project site are the jurisdictional seasonal wetlands contained in the truncated swale feature. A preliminary jurisdictional wetland delineation was completed and verified by the US Army Corps of Engineers (USACE) in 2014. Based on the USACE-confirmed map, 0.133 acre of seasonal wetlands would be impacted by the proposed project. This impact is considered significant. Impacts to the wetlands will require a CWA 404 nationwide permit from the USACE and CWA 401 water quality certification from the Regional Water Quality Control Board. In addition, the project may be subject to Fish and Game Code Section 1600 in which a Lake and Streambed Alteration Agreement from the CDFW would be required. Therefore, the project applicant is required to coordinate with the CDFW to determine if a 1602 Lake and Streambed Alteration Agreement is required. The applicant applied for a 404 USACE permit, requesting authorization to use Nationwide Permit (NWP) 29 (Residential Developments) for impacts to 0.133 acre of waters of the United States. The USACE issued the permit on January 15, 2015 (Corps File No. SPK–2014-00644).

A total of 0.133 acre of jurisdictional seasonal wetlands will be permanently impacted. Implementation of mitigation measure **MM 4.7** will reduce impacts to jurisdictional features and sensitive natural communities to a less than significant level by requiring compensatory mitigation at a 1:1 ratio.

d) **No Impact**. The project is located in an infill area surrounded by urban development. According to the CDFW Biogeographic Information and Observation System (CDFW 2016), the project site does not contain any Essential Connectivity Areas or wildlife migration corridors. There would be no impact.

e) **Less Than Significant Impact**. According to the City of Antioch's tree preservation ordinance, there are six "categories" of trees: established, indigenous, landmark, mature, protected, and street. The proposed project would result in the removal of 13 protected trees: 2 mature trees, 4 landmark trees, and 7 established trees. The trees proposed for removal were evaluated by a certified arborist, with the results reported in the BRA. Of the 13 protected trees, 9 are in poor or very poor condition, and the rest are in fair condition.

No street trees would be removed. The project applicant is required to comply with the City ordinance by compensating for the loss of up to 13 protected trees. The following replacement trees must be planted in accordance with the City's tree preservation ordinance (Antioch Municipal Code Section 9-5.1205):

- Each established tree: two 24-inch box trees.
- Each mature tree: two 48-inch box trees.
- Legally removed indigenous and landmark trees shall be replaced by boxed specimens at a rate and size to be established by the decision-making body at the time of regular development application approval.
- All future owners of parcels on which trees were required to be maintained (as a condition of approval) shall be responsible for continued maintenance of such trees. Buyers of property with such trees, as well as buyers of new all single-family homes, shall be given disclosure notices from the owner and/or developer of this requirement, and all other responsibility of tree management and/or preservation as required by the Antioch Zoning Code.

The proposed project would be required to comply with the City's tree protection ordinance, as detailed above. Therefore, impacts would be considered less than significant.

f) **No Impact.** The project is located in Antioch, which is not in an area covered under an approved habitat conservation plan or natural community conservation plan. Therefore, the proposed project would have no impact.

Mitigation Measures

MM 4.1 If clearing and/or construction activities would occur during the raptor nesting season (February 1–September 15), preconstruction surveys to identify active nests shall be conducted by a qualified biologist within 14 days prior to construction initiation. Surveys must be performed by a qualified biologist for the purposes of determining presence/absence of active nest sites within the proposed impact area, including construction access routes and a 200-foot buffer (if feasible). If no active nests are found, no further mitigation is required. Surveys shall be repeated if construction activities are delayed or postponed for more than 30 days.

If white-tailed kite, northern harrier, or other raptor (excluding Swainson's hawk) nests are identified within 500 feet of project activities, a 250-foot setback shall be imposed to all active raptor sites prior to commencement of project construction activities to avoid construction- or access-related disturbances to nesting raptors. Project-related activities (i.e., vegetation removal, earth moving, and construction) shall not occur within any setbacks until nests are deemed inactive.

If active Swainson's hawk nest sites are identified within 0.25 mile of project activities, a 0.25-mile setback shall be imposed to all active nest sites prior to commencement of any construction activities to avoid construction- or access-related disturbances to nests. Project-related activities (i.e., vegetation removal, earth moving, and construction) shall not occur within the setback until the nest is deemed inactive. Activities permitted within setbacks and the size of setbacks may be adjusted through consultation with the CDFW.

Timing/Implementation: *Prior to and during construction*

Enforcement/Monitoring: *City of Antioch Planning Division*

MM 4.2 If clearing and/or construction activities will occur during the nesting period for western burrowing owls (February 1–August 31), a qualified biologist shall conduct preconstruction surveys on and adjacent to the project site within 14 days prior to construction initiation. Surveys shall be conducted in accordance with the CDFW's Staff Report on Burrowing Owl Mitigation, published March 7, 2012. Surveys shall be repeated if project activities are suspended or delayed for more than 15 days during the nesting season.

If no western burrowing owls are detected, no further mitigation is required. If active burrowing owls nest sites are detected, the City shall require implementation of the avoidance, minimization, and mitigation methodologies outlined in the CDFW's Staff Report (see **Appendix BIO**) prior to the initiation of project-related activities that may impact burrowing owls.

Timing/Implementation: *Prior to start of construction*

Enforcement/Monitoring: *City of Antioch Planning Division*

MM 4.3 If clearing and/or construction activities will occur during the migratory bird nesting season (February 1–September 1), preconstruction surveys to identify active migratory bird nests shall be conducted by a qualified biologist within 14 days prior to construction initiation. Focused surveys must be performed by a qualified biologist for the purposes of determining the presence/absence of active nest sites within the proposed impact area, including construction access routes and a 200-foot buffer (if feasible).

If migratory bird nests are identified within 200 feet of project activities, a 150-foot setback shall be imposed to all active migratory bird nest sites prior to commencement of project construction activities to avoid construction or access-related disturbances to nesting birds. Project-related activities (i.e., vegetation removal, earth moving, and construction) shall not occur within any setbacks until nests are deemed inactive.

Timing/Implementation: *Prior to and during construction*

Enforcement/Monitoring: *City of Antioch Planning Division*

MM 4.4 Trees containing active migratory bird and/or raptor (excluding Swainson's hawk) nests that must be removed as a result of the project shall be removed during the non-breeding season (September 16–January 31). Swainson's hawks are state listed as threatened species; therefore, impacts to trees containing Swainson's hawk nests require regulatory authorization from the CDFW prior to removal.

Timing/Implementation: *Prior to start of construction*

Enforcement/Monitoring: *City of Antioch Planning Division*

MM 4.5 In order to avoid impacts to roosting special-status bats, a tree survey shall be conducted 15 days prior to commencement of project activities. Tree cavities and exfoliated bark that could provide roosting or maternity habitat shall be examined for evidence of use by bats. All bat surveys shall be conducted by a biologist with known experience surveying for bats. If roosts are found, a determination shall be made whether young are present. If a maternity site is found, impacts to that tree shall be avoided until the young have reached independence. If adults are found roosting but no maternity sites are found, the adult bats can be flushed prior to the time the tree in question would be removed or disturbed.

Timing/Implementation: *Prior to and during project construction*

Enforcement/Monitoring: *City of Antioch Planning Division*

MM 4.6 Construction activities shall occur during daylight hours. If bats are observed foraging during daylight hours, construction activities shall cease until bats are no longer observed in the area.

Timing/Implementation: *During project construction*

Enforcement/Monitoring: *City of Antioch Planning Division*

MM 4.7 The project applicant shall offset the 0.133 acre of seasonal wetlands permanently impacted by the proposed project at a 1:1 ratio through the dedication of mitigation credit(s) within a USACE-approved mitigation bank or through the payment of in-lieu fees to an approved conservation bank.

Timing/Implementation: *Prior to project construction*

Enforcement/Monitoring: *City of Antioch Planning Division*

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
5. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

The setting and impact analysis in this subsection is based on a number of resources, including a records search conducted by staff at the Northwest Information Center (NWIC), literature review, Native American consultation, historical society consultation, and field survey of the project area, as well as a 2014 cultural resources study completed for the project and presented in **Appendix CUL** to this Initial Study.

SETTING

CONCEPTS AND TERMINOLOGY FOR IDENTIFICATION OF CULTURAL RESOURCES

Cultural resources include historical resources and archaeological resources (as defined in Public Resources Code Section 15064.5). Cultural resources are any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Generally, a resource is considered by the lead agency to be historically significant if the resource meets the criteria for listing in the California Register of Historical Resources (California Code of Regulations Title 14(3) Section 15064.5(a)(3)).

CULTURAL RESOURCE IDENTIFICATION EFFORTS

RECORDS SEARCH

To determine the presence of previously identified cultural resources, NWIC staff conducted a records search of the project site with a quarter-mile search radius. The NWIC, as part of the California Historical Resources Information System, California State University, Sonoma, an affiliate of the California Office of Historic Preservation (OHP), is the official state repository of cultural resource records and reports for Contra Costa County. As part of the records search, the following federal and state inventories were reviewed:

- California Inventory of Historic Resources (OHP 1976).
- California Points of Historical Interest (OHP 1992).

- California Historical Landmarks (OHP 1996).
- Directory of Properties in the Historic Property Data File for Contra Costa County (OHP 2012b). The directory includes the listings of the National Register of Historic Places (National Register), National Historic Landmarks, California Register of Historical Resources (California Register), California Historical Landmarks, and California Points of Historical Interest.
- Archaeological Determinations of Eligibility for Contra Costa County (OHP 2012a). The directory includes National Register and California Register eligibility determinations for archaeological resources in Contra Costa County.

Results

One cultural resource was identified in the project area.

- **Contra Costa Las Postas Transmission Line** (P-07-2951) – This resource was evaluated and recommended not eligible for inclusion in the National Register and the California Register due to lack of historic significance. The evaluation was not sent to OHP for concurrence and is not listed in the Historic Property Data File (OHP 2012b).

Three resources were identified within a quarter-mile radius of the project area.

- **Contra Costa Canal** (P-07-002695) was determined eligible for listing in the National Register, through consensus determination with the State Historic Preservation Officer (SHPO), on March 9, 2005. It is eligible for listing under Criterion A, at the local level, for its association with the Central Valley Project and the economic development of eastern Contra Costa County. It has a period of significance from 1937 to 1951. Prior to the 2005 eligibility determination, the Contra Costa Canal had been determined not eligible, through consensus determination with the SHPO, in 1992. It is a historical resource as defined by CEQA.
- **P-07-003002** is an archaeological site consisting of remnants of a historic farm/ranch. It is not listed in the OHP Archaeological Determinations of Eligibility (OHP 2012a). It is not a historical resource as defined by CEQA.
- **Contra Costa-Moraga Transmission Line** (P-07-004688) is not listed in the OHP (2012b) Historic Property Data File and is not a historical resource as defined by CEQA.

One cultural resources report was prepared for the project. A summary of the report is provided below.

Janine M. Origer

2014 *A Cultural Resources Survey of the property at Hillcrest Avenue and Wildflower Drive Antioch, Contra Costa County, California*. Tom Origer & Associates, Rohnert Park, CA.

The cultural resources study was completed to satisfy requirement of Section 106 of the National Historic Preservation Act and included the methods and results of a records search, Native American consultation, and a field survey of the project area. No prehistoric or historical cultural resources were identified during the survey.

Four additional cultural resource reports were previously completed in the project area, and nine cultural resources report were completed within a quarter-mile radius of the project site. No historical resources were identified in the project area in these reports. Refer to **Appendix CUL** for a list of reports.

MAP RESEARCH

Michael Baker International staff conducted a map search of the project area to determine the presence of cultural resources. The following maps were reviewed:

- Township 2 North, Range 2 E, Mount Diablo Meridian (BLM 1862)
- Mt. Diablo, Calif. 1:62,500 scale topographic quadrangle (USGS 1896)
- Lone Tree Valley, Calif. 1:31,680 topographic quadrangle (USGS 1916)
- Mt. Diablo, Calif. 1:62,500 scale topographic quadrangle (USGS 1943)
- Aerial Single Frame Photo ID: 1JL0000010004 (USGS 1949)
- Antioch South, Calif. 7.5-minute topographic quadrangle (USGS 1953)
- Aerial Single Frame Photo ID: 1SWIP00010339 (USGS 1974)

Results

The 1862 public land survey map depicts no resources in the project area (BLM 1862).

The 1896 topographic map depicts one building on the project site. The building is no longer extant. A small natural waterway is also depicted extending north–south through the project site (USGS 1896).

The 1916 topographic map depicts no buildings on the site (USGS 1916). By 1943, one building is depicted in approximately the northeast corner of Hillcrest Avenue and Deer Valley Road. The building does not appear in a 1949 aerial view of the project area (USGS 1943, 1949).

The 1949 aerial view of the project site depicts one natural creek and what appears to be a water conveyance canal leading to an orchard that existed east of the site. The waterways appear to lead south and terminate at the Contra Costa Canal located approximately a quarter-mile south of the project site. A transmission line with towers extends north–south through the project site (USGS 1949).

By 1953, no buildings are depicted on the project site, and by 1974, a majority of the project site is depicted as an orchard (USGS 1953, 1974). Remnants of the orchard are extant today.

FIELD SURVEY

On December 12, 2016, the project site was surveyed in north–south, 10- to 20-meter transects. Visibility was approximately 10 percent with a total coverage of approximately 70 percent. Rodent backdirt was inspected throughout the site. No archaeological artifacts, features, materials, or residues were observed.

SENATE BILL 18 NATIVE AMERICAN CONSULTATION

Senate Bill (SB) 18 requires local governments to contact, provide notice to, refer plans to, and consult with tribes within a certain timeline during both the adoption and amendment of either general plans or specific plans. The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage. This provides tribes the opportunity to protect, or mitigate impacts to, cultural places, prior to site-specific, project-level land use decisions are made by a local government. Land use decisions also include open space elements, open space designations, and conservation easements (OPR 2005).

The City contacted representatives listed on the Native American Heritage Committee (NAHC) contact list for Contra Costa County in accordance with SB 18 on November 23, 2016. No responses were received. See **Appendix CUL** for the SB 18 consultation log.

HISTORICAL SOCIETY CONSULTATION

On November 16, 2016, Michael Baker International sent a letter describing the project, with maps depicting the project area, to the Antioch Historical Society requesting any information or concerns. No response to the letter has been received to date.

SUMMARY OF FINDINGS

HISTORICAL RESOURCES

Research revealed that no historical resources are located on the project site. One historical resource, the Contra Costa Canal, is located approximately 0.15 mile from the project site. The Contra Costa Canal is significant for its association with the Central Valley Project and the economic development of eastern Contra Costa County. The residential development associated with the project will not directly impact the historical significance of the canal because the historical resource is outside the project site. Indirect impacts to the historical resource would be possible if the resource's significance was based on its setting; however, its significance is based on engineering and development. Therefore, development near the canal would not indirectly impact the Contra Costa Canal's eligibility for the National Register. The canal would remain associated with its significance despite the nearby development, and the project would have a less than significant impact to cultural resources.

ARCHAEOLOGICAL RESOURCES

No archaeological resources were identified during the records search or the field survey on the project site.

DISCUSSION OF IMPACTS

a) **No Impact.** As discussed above, no historical resources will be directly or indirectly impacted by the project. Therefore, no impact would occur.

b–d) **Less Than Significant Impact With Mitigation Incorporated.** No archaeological or paleontological resources or human remains are known on the project site. However, the project would include ground-disturbing activities that could result in the unanticipated or accidental discovery of archaeological deposits, paleontological resources, or human remains. Mitigation measure **MM 5.1** would ensure that provisions are in place to protect

prehistoric or historical archaeological deposits encountered during construction. The measure requires impacts on such resources to be avoided or further investigation to be conducted to offset the loss of scientifically consequential information that would occur if avoidance is not possible.

Mitigation measure **MM 5.2** would ensure that human remains encountered during project activities would be treated in a manner consistent with state law. This would occur through coordination with descendant communities to ensure that the traditional and cultural values of said communities are incorporated in the decision-making process concerning the disposition of human remains that cannot be avoided.

Implementation of mitigation measures **MM 5.1** and **MM 5.2** would ensure that provisions are in place to reduce impacts on currently undiscovered archaeological resources, paleontological resources, and human remains to a less than significant level.

Mitigation Measures

MM 5.1 **Treatment of previously unidentified archaeological and paleontological deposits**. If prehistoric or historical archaeological deposits or paleontological resources are discovered during construction, the project applicant and/or contractor shall stop all work within 25 feet of the discovery and an archaeologist or paleontological shall assess the situation, consult with agencies as appropriate, and make recommendations regarding the treatment of the discovery. The project applicant and/or contractor shall avoid impacts to archaeological deposits to the extent feasible, but if such impacts cannot be avoided, the deposits shall be evaluated for their California Register eligibility. If the deposit is not eligible for the California Register, no further protection of the finds is necessary. If the deposits are California Register eligible, they shall be protected from project-related impacts, or such impacts shall be mitigated. Mitigation may consist of but is not necessarily limited to systematic recovery and analysis of archaeological deposits, recordation of the resource, preparation of a report of findings, and accession of recovered archaeological materials at an appropriate curation facility. Public educational outreach may also be appropriate.

Timing/Implementation: *During construction activities*

Enforcement/Monitoring: *City of Antioch Planning Division*

MM 5.2 **Treatment of previously unidentified human remains.** The project applicant and/or contractor shall treat any human remains encountered during ground-disturbing activities in accordance with California Health and Safety Code Section 7050.5. There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the Contra Costa County coroner has determined the manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation or to his or her authorized representative. At the same time, an archaeologist shall be contacted to assess the situation and consult with agencies as appropriate. Project personnel/construction workers shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the coroner must notify the Native

American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Native American most likely descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.

Timing/Implementation: *During construction activities*

Enforcement/Monitoring: *City of Antioch Planning Division*

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
6. GEOLOGY AND SOILS. Would the project:				
a) Expose people or structures to 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 or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☒	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
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?	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☒	☐	☐
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?	☐	☐	☐	☒

DISCUSSION OF IMPACTS

The following analysis is based primarily on a draft geotechnical investigation prepared for the project site by Stevens, Ferrone & Bailey Engineering Company (2015).

a)

i. **No Impact**. The project site is located in the San Francisco Bay Area, one of the most seismically active regions in the United States. The site is located approximately 0.3 mile west of the potentially active, early Quaternary Davis fault (previously referred to as the Antioch fault) that shows evidence of displacement during the last 1.6 million years. The project site is not located in an Alquist-Priolo Earthquake Fault Zone as designated by the State of California (Stevens, Ferrone & Bailey 2015). Therefore, the project site is not considered to be at risk for surface fault rupture, and there would be no impact.

ii. **Less Than Significant Impact**. Antioch Municipal Code Section 8-4.01 adopted the California Building Code. The proposed project would be subject to the California Building Code seismic design force standards for the Antioch area. Compliance with these standards would ensure that the structures and associated improvements are designed and constructed to withstand expected seismic activity and associated potential hazards, including strong seismic ground shaking and seismic-induced ground failure (i.e., liquefaction, lateral spreading, landslide, subsidence, and collapse), thereby minimizing risk to the public and property. Therefore, this impact would be less than significant.

iii. **Less Than Significant Impact**. See Issue a)(ii).

iv. **Less Than Significant Impact With Mitigation Incorporated**. According to US Geological Survey Report 97-745 (landslide folio of the San Francisco Bay Area), the project site is not mapped as having previously identified landslides or earthflows, nor is it located in an area having debris flow source potential. Based on the results of reconnaissance, field exploration and review of available documents, Stevens, Ferrone & Bailey (2015) did not identify evidence of adverse slope stability, erosion, or drainage conditions at the site and concluded that there is a low potential for slope instability occurring at the site provided the recommendations of the geotechnical investigation are incorporated into project plans. Furthermore, the project proposes to limit slopes to 2:1 and construct retaining walls to accommodate the proposed development and ensure slope stability. Mitigation measure **MM 6.1** would ensure that all recommendations in the geotechnical investigation prepared by Stevens, Ferrone & Bailey (2015) are incorporated into project plans and would reduce this impact to less than significant.

b) **Less Than Significant Impact**. The project site is currently not developed. Project construction would include land clearing, grading, excavating, and other soil-disturbing activities that would expose site soils to wind and water erosion. All grading activities would be required to be in compliance with Section 9-5.2408 of the Antioch Municipal Code**.** The City would review grading plans to ensure that grading would not impact adjacent property owners and that it would be limited to the portion of the site required for each residence. The Municipal Code requires all construction activities to conform to the City's grading and erosion control requirements and other generally accepted engineering practices for erosion control. These measures may include hydroseeding, straw mulch, earth dikes and drainage swales, and slope drains, as necessary.

All construction activities would be subject to standards in California Building Code Chapter 70, which would ensure implementation of appropriate measures during grading activities to reduce soil erosion.

Because the project would disturb more than 1 acre of land, the project applicant would be required to prepare and comply with a stormwater pollution prevention plan (SWPPP). This plan would include a schedule for the implementation and maintenance of erosion control measures and a description of the erosion control practices, including appropriate design details and a time schedule. The SWPPP would consider the full range of erosion control best management practices (BMPs), including any additional site-specific and seasonal conditions. As further discussed in subsection 9, Hydrology and Water Quality, the State Water Resources Control Board (SWRCB) adopted a Construction General Permit (CGP) (Order No. 2009-009-DWQ) and associated amendment that include additional standards and requirements to avoid soil erosion.

Compliance with these existing regulatory requirements and implementation of project-specific erosion management would minimize the potential for soil erosion during project construction and operation. Therefore, this impact would be less than significant.

c, d) **Less Than Significant Impact With Mitigation Incorporated**. According to Stevens, Ferrone & Bailey (2015), the project site contains clayey soils and claystone bedrock, which have moderate to critical expansion potential, as well as siltstone bedrock, which has relatively low expansion potential. The geotechnical engineering report provides recommendations to address the varying expansion potentials of the site soils, including ensuring that only soils of similar expansion potential underlie a given structure and importing engineered fill. Incorporation of these recommendations into project plans would ensure that the proposed development is designed and constructed to withstand the stresses of swelling and shrinkage of the underlying soils. Therefore, with implementation of mitigation measure **MM 6.1**, this impact would be less than significant.

e) **No Impact**. The project would be served by a public sewer system. Therefore, no septic tanks or alternative wastewater disposal systems would be associated with the project. The project would have no impact.

Mitigation Measures

MM 6.1 The project applicant shall incorporate the recommendations of the geotechnical investigation report dated January 9, 2015, prepared by Stevens, Ferrone & Bailey Engineering Company or as approved by the City Engineer. The project's building plans shall demonstrate that they incorporate all applicable recommendations from the geotechnical study and comply with all applicable requirements of the latest adopted version of the California Building Code. A licensed professional engineer shall prepare the plans, including those that pertain to soil engineering, structural foundations, pipeline excavation, and installation. All on-site soil engineering activities shall be conducted under the supervision of a licensed geotechnical engineer or certified engineering geologist.

Timing/Implementation: *Reviewed as part of construction plans; verified prior to occupancy*

Enforcement/Monitoring: *City of Antioch Engineering and Development Services Division*

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
7. GREENHOUSE GAS EMISSIONS. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

SETTING

Greenhouse gases (GHGs) are released as byproducts of fossil fuel combustion, waste disposal, energy use, land use changes, and other human activities as well as many natural processes. This release of gases, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), creates a blanket around the earth that allows light to pass through but traps heat at the surface, preventing its escape into space. **Table 7-1** describes the primary GHGs attributed to global climate change, including a description of their physical properties and primary sources.

TABLE 7-1
GREENHOUSE GASES

Greenhouse Gas	Description
Carbon dioxide (CO_2)	CO_2 is a colorless, odorless gas and is emitted in a number of ways, both naturally and through human activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. The atmospheric lifetime of CO_2 is variable because it is so readily exchanged in the atmosphere.[1]
Methane (CH_4)	CH_4 is a colorless, odorless gas that is not flammable under most circumstances. CH_4 is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. CH_4 is emitted from both human-related and natural sources. Methane's atmospheric lifetime is about 12 years.[2]
Nitrous oxide (N_2O)	N_2O is a clear, colorless gas with a slightly sweet odor. N_2O is produced by natural and human-related sources. Primary human-related sources are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. The atmospheric lifetime of N_2O is approximately 120 years.[3]

Sources: [1]EPA 2011a, [2]EPA 2011b, [3]EPA 2010

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. Estimates of GHG emissions are commonly presented in carbon dioxide equivalents (CO_2e), which weighs each gas by its global warming potential (GWP). Expressing GHG emissions in CO_2e takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

The City of Antioch has adopted a Community Climate Action Plan (CCAP) to outline strategies and activities the City and the community can take to reduce GHG emissions produced in Antioch. The CCAP is a strategic planning document that identifies sources of GHG emissions within the city's boundaries, presents current and future emissions estimates, identifies a GHG reduction target for future years, and presents strategic programs, policies, and projects to reduce emissions from the energy, transportation, land use, water use, and waste sectors (Antioch 2011). The GHG reduction programs, policies, projects, and strategies are referred to as "reduction strategies" in the plan. Implementation of the CCAP is intended to support statewide efforts under the California Global Warming Solutions Act (Assembly Bill [AB] 32) to reduce GHG emissions in California to 1990 levels by 2020.

GHG emissions contribute, on a cumulative basis, to significant adverse environmental impacts. While no single project could generate enough GHG emissions to noticeably change the global average temperature, the combination of GHG emissions from past, present, and future projects contributes substantially to the phenomenon of global climate change and its associated environmental impacts, and, as such are addressed only as a cumulative impact. The Bay Area Air Quality Management District's (BAAQMD; 2017) CEQA Guidelines included three options for evaluating the impact of a project's operational GHG emissions.

- Meet all screening criteria for the land use type listed in Table 3-1 of the BAAQMD CEQA Guidelines; or
- Be located in a community with an adopted qualified GHG reduction strategy and the project identifies and implements all applicable feasible measures and policies from the strategy; or
- Have estimated GHG operational emissions that are quantified and fall below the bright-line threshold of significance of 1,100 metric tons of CO_2e per year or the efficiency threshold of significance of 4.6 metric tons of CO_2e per service population per year.

The BAAQMD greenhouse gas thresholds were developed based on overall projections of development in the region, and how the region would come into compliance with the goals established by AB 32. BAAQMD thresholds were developed based on substantial evidence that such thresholds represent quantitative levels of GHG emissions, compliance with which means that the environmental impact of the GHG emissions would normally not be cumulatively considerable under CEQA (BAAQMD 2009, 2017).

The BAAQMD recommends that lead agencies determine appropriate air quality thresholds to use for each project they review based on substantial evidence which they should include in the administrative record for the project. The BAAQMD (2009) developed its CEQA thresholds options and justification report for determining appropriate thresholds.

DISCUSSION OF IMPACTS

a) **Less Than Significant Impact.** Projected construction and operational emissions for the proposed project were quantified using the California Emissions Estimator (CalEEMod) Version 2106.3.1. The proposed project's GHG inventory include short-term emissions from construction activities (primarily emissions from equipment exhaust) and long-term regional emissions from the operational activities of the proposed project. Operational emissions include regional emissions associated with new vehicular trips and indirect source emissions, such as electricity use for lighting, energy resulting from water use, and emissions resulting from solid waste collection and disposal.

Construction GHG Emissions

The BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. However, the air district recommends quantification and disclosure of GHG emissions that would occur during construction and to make a determination on the significance of these construction-generated GHG emissions impacts in relation to meeting AB 32 greenhouse gas reduction goals (statewide reduction of GHG emissions to 1990 levels by 2020). Construction of the proposed project is anticipated to be completed by 2020.

The projected quantity of annual GHG emissions generated by construction equipment is shown in **Table 7-2.** The total estimated GHG emissions from construction activities are amortized over the 30-year expected life span of the buildings and included in the project's estimated operational GHG emissions.

TABLE 7-2
CONSTRUCTION-RELATED GREENHOUSE GAS EMISSIONS (METRIC TONS PER YEAR)

Construction Year	CO_2e
2018	417.6
2019	471.4
Total	**889.0**
Amortized Construction Emissions	
889.0 metric tons/30 years	**29.6**

*Source: CalEEMod version 2016.3.1. See **Appendix GHG** for emission model outputs.*
Notes: Project construction activities are assumed to occur over an 18-month period.

The BAAQMD requires that all construction projects incorporate Basic Construction Management Practices (summarized in subsection 4.3**, Table 3-5**) primarily to reduce particulate emissions. These practices would also reduce the emissions of GHGs from diesel-powered equipment during construction. Although not required to reduce GHG emissions to a less than significant level, implementation of mitigation measure **MM 3.1** to require all off-road diesel powered equipment used for grading or excavation activities to be CARB Tier 3-certified or better would further minimize construction-related GHG emissions to the extent feasible, consistent with AB 32 greenhouse gas reduction goals. Therefore, impacts resulting from GHG emissions due to construction activities would result in a less than significant impact.

Operational GHG Emissions

For the proposed project, mobile GHG emissions account for nearly 70 percent of total GHG emissions (see **Table 7-3**). Mobile emissions are primarily due to vehicle miles traveled (VMT) as a result of new trips generated by the project. Typically, VMT for a proposed retail project is calculated using average trip distances for similar categories of retail land uses in the state or region. To gain a more accurate estimate of the project's total VMT, the intended use of the project's retail component to serve the needs of project residents and neighborhoods within 1 to 3 miles was accounted for in the emissions modeling.

The CEQA thresholds options and justification Report (BAAQMD 2009) outlines substantial evidence supporting a variety of thresholds of significance. Based on the discussion above and exercising its own discretion as the lead agency, the City of Antioch has selected the BAAQMD CEQA Guidelines efficiency metric threshold for the proposed project's GHG analysis.[3] For operational GHG emissions, the applicable BAAQMD efficiency threshold of significance is whether the project would exceed 4.6 metric tons of CO_2e per service population per year. Service population is defined as project residents plus project employees. The projected annual GHG emissions resulting from project operation are summarized in **Table 7-3**.

TABLE 7-3
GREENHOUSE GAS EMISSIONS – PROJECT OPERATIONS (METRIC TONS PER YEAR)

Emissions Source	CO_2e
Construction (amortized over 30 years)	29.6
Area	7.3
Energy	587.4
Mobile	1,703.2
Waste	84.9
Water	51.7
Total	2,463.9
Efficiency (Total GHG 2,463.9 ÷ Service Population 566) (Metric Tons CO_2e/Service Population/Year)	**4.35**
Annual Threshold Comparison	
BAAQMD Potentially Significant Impact Threshold (Metric Tons CO_2e/Service Population/Year)	4.6
Exceed BAAQMD Threshold?	**No**

*Source: CalEEMod version 2016.3.1 See **Appendix GHG** for emission model outputs.*

Notes: Emissions estimates assume commercial customer average trip consistent with Neighborhood/Community Commercial District zoning. Emissions model accounts for no wood hearths per BAAQMD Regulation 6, Rule 3. Emissions model also accounts for project characteristics that reduce VMT per CAPCOA (2010) greenhouse gas reduction measures: LUT-3 Increased Diversity of Urban and Suburban Developments (mixed-use); LUT-5 Land Use/Location: reduced distance to transit; and SDT-1 Neighborhood/Site Improvements: provide pedestrian network improvements.

Service population calculated using 1 employee per 500 square feet of retail and 3.22 persons per dwelling unit (Antioch 2015).

As shown, project-related operational GHG emissions would not exceed the BAAQMD service population efficiency threshold. Therefore, impacts resulting from GHG emissions due to operation of the project would be less than significant.

[3] The proposed project does not meet the BAAQMD 2017 CEQA Guidelines Table 3-1 screening criteria for operational GHG emissions, and the City of Antioch CCAP is not a qualified GHG Reduction Strategy. It is anticipated that the proposed project would be completed and occupied by 2020; thus, it is within the AB 32 timeline for emissions reduction and the associated service population metric.

b) **Less Than Significant Impact.** As required by the Sustainable Communities and Climate Protection Act of 2008 (Senate Bill [SB] 375), the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) developed a Sustainable Communities Strategy (SCS) plan as a component of Plan Bay Area 2013–2040 (ABAG and MTC 2013). This plan seeks to reduce greenhouse gas and other mobile source emissions through coordinated transportation and land use planning to reduce VMT.

A component of the SCS plan is to focus higher density residential and mixed-use development in Transportation Priority Project (TPP) areas. The area within a 0.5-mile radius of the Antioch eBART station has been designated a TPP area. More than 75 percent of the project site is within this TPP area. The inclusion of multi-family and single-family residential components in the project would help achieve the SCS plan's goals for the reduction of vehicle miles traveled. In addition, the retail component of the project would serve the needs of the project's residents, neighboring residents within 1 to 3 miles, and motorists along the SR 4 corridor, further reducing VMT in Antioch and the region. Therefore, the project would not conflict with or obstruct implementation of Plan Bay Area.

The City's (2011) Community Climate Action Plan (CCAP), Strategy L1, Transportation Oriented Development, seeks to prevent suburban sprawl and encourage mixed-use residential and commercial development. The proposed project would support this strategy by increasing residential density within the eBART Transportation Priority Project area. The project would not conflict with any of the other land use, transportation, green building, or energy efficiency strategies in the CCAP. As discussed in subsection 13, Population and Housing, the proposed development intensity and anticipated population increase would be within the growth projections assumed in the General Plan and, thus, would also be included in the GHG inventory assumed in the CCAP. The proposed project would not conflict with or obstruct implementation of the CCAP. Therefore, this impact would be less than significant.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
8. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
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?	☐	☐	☐	☒
e) For a project located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or a public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

DISCUSSION OF IMPACTS

a) **Less Than Significant Impact**. Public health is potentially at risk whenever hazardous materials are used. It is necessary to differentiate between the hazard of these materials and the acceptability of the risk they pose to human health and the environment. A hazard is any situation that has the potential to cause damage to human health and the environment. The risk to health and public safety is determined by the probability of exposure, in addition to the inherent toxicity of a material. Factors that can influence the

health effects when human beings are exposed to hazardous materials include the dose to which the person is exposed, the frequency of exposure, the duration of exposure, the exposure pathway (route by which a chemical enters a person's body), and the individual's unique biological susceptibility.

Both the US Environmental Protection Agency (EPA) and the US Department of Transportation (DOT) regulate the transport of hazardous waste and material, including transport via highway. The EPA administers permitting, tracking, reporting, and operations requirements established by the Resource Conservation and Recovery Act. The DOT regulates the transportation of hazardous materials through the Hazardous Materials Transportation Act. This act includes requirements for container design and labeling, as well as for driver training. The established regulations are intended to track and manage the safe interstate transportation of hazardous materials and waste. California Code of Regulations (CCR) Title 22 (Social Security, Division 4.5, Environmental Health Standards for the Management of Hazardous Waste) defines hazardous and special waste, identifies federal and state hazardous waste criteria, and regulates the storage, transportation, and disposal of waste. Title 22 was created to regulate the hazardous wastes generated by factories or similar sources, but soil excavated during construction may also be regulated. If contaminated soil meets Title 22 waste criteria and will be excavated during construction, the soil must be handled in a manner consistent with the regulations. These regulations are also found in Title 26. Additionally, state and local agencies enforce the application of these acts and coordinate safety and mitigation responses in the case that accidents involving hazardous materials occur.

The proposed project would include construction and landscaping activities that could involve limited transport, use, and disposal of hazardous materials such as fuels, asphalt, lubricants, toxic solvents, pesticides, and herbicides. The project applicant would be required to ensure proper transportation, waste treatment, and disposal of hazardous materials during construction activities in accordance with all applicable federal, state, and local laws. If any fuel or oil spills were to occur, they would be minor based on the quantity of such materials typically stored and/or used on a construction site. In addition, the project applicant would be required to develop and implement a SWPPP that includes best management practices to prevent or reduce the movement of sediment, nutrients, pesticides, and other pollutants from the construction site to surface water or groundwater. BMPs identified in the stormwater pollution prevention plan would prevent impacts on surface water or groundwater associated with the use and handling of hazardous materials during construction activities.

Project Operation

Project implementation would result in the development of residential and retail uses, which would not be expected to involve the routine transport, use, or disposal of substantial amounts of hazardous materials. Residents could use materials classified as household hazardous waste, including common items such as paints, cleaners, motor oil, pesticides, batteries, light bulbs, televisions, and computer monitors. Because it is illegal to dispose of household hazardous waste in the trash, down storm drains, or onto the ground, the proposed project could increase the amount of household hazardous waste being transported to the Household Hazardous Waste Facility, located at 2500 Pittsburg-Antioch Highway, which accepts and safely disposes of hazardous materials from Antioch residents at no charge. Because of the nature of household hazardous materials, transport of hazardous materials to and from the project site would be in relatively small amounts and would not result in significant hazards to the public or to the environment.

For the reasons discussed above, the proposed project would not create a significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous materials. Therefore, impacts would be less than significant.

b) **Less Than Significant Impact**. The project site is vacant, but the property was under agricultural production from approximately 1949 to 1998. AEI Consultants (2015a) prepared a Phase I Environmental Site Assessment (ESA) to assess whether the shallow soils on the property had been impacted by prior use of pesticides or whether there were other hazardous materials–related existing or historic uses that could pose a hazard. Based on the Phase I ESA, a subsurface investigation (Phase II) was performed, which consisted of the collection and analysis of soil samples from across the project site for organochlorine pesticides and arsenic. The concentrations of all organochlorine pesticides were below the laboratory reporting limits in the composite soil samples. Arsenic concentrations measured in all discrete soil samples collected from the property fell within the typical range of background concentrations for California soils. Based on the results from the Phase II investigation activities, no further investigation related to historical application of pesticides at the project site was recommended (AEI 2015b). Based on these studies, the potential for the project to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment is considered less than significant.

c) **No Impact**. There are no schools within one-quarter mile of the project site. Therefore, the project would not be a source of hazardous emissions or handle acutely hazardous materials within one-quarter mile of a school. There would be no impact.

d) **No Impact**. The project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (Cortese List) (AEI 2015a; DTSC 2016; SWRCB 2016). As described above, soils on the project site were tested for residual agricultural chemicals, and the results of testing indicate there is no human health hazard. Therefore, the project would result in no impact.

e, f) **No Impact**. There are no public or private airports within 2 miles of the project site. The closest airport is the Funny Farm airstrip located in Brentwood, approximately eight miles from the project site. Therefore, there would be no impact.

g) **Less Than Significant Impact**. The proposed project would not result in any changes to Hillcrest Avenue or Wildflower Drive, which provide direct access to the project site. New access to the single-family residential area of the site would be via a new road extended to the north from Wildflower Drive. Operation of the proposed project would not block access to any major roadways or facilities critical to emergency response or evacuation.

Construction activities could temporarily affect traffic operations on affected roadways. Prior to the issuance of grading and building permits, the project applicant would be required to submit a traffic control plan to the City for approval. Additional details on the traffic control plan are provided in subsection 16, Transportation/Traffic. With implementation of the traffic control plan, adequate access would be maintained for emergency responders and evacuation routes. Therefore, this impact would be less than significant.

h) **Less Than Significant Impact**. The project site is not designated as a Very High Fire Hazard Severity Zone (Cal Fire 2009). The site is located in an urbanized area that is served by a public fire protection district (the Contra Costa County Fire Protection District) and is not subject to significant risk of wildland fire. This impact would be less than significant.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
9. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☐	☐	☒	☐
e) 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?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of a failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

DISCUSSION OF IMPACTS

a, e) **Less Than Significant Impact**. The project would be a source of stormwater discharges, which are regulated at the state and local levels. The following discussion summarizes the regulatory requirements and how the project would comply with those requirements.

Construction

Stormwater runoff from construction sites in the state is regulated as required under Section 402 of the Clean Water Act National Pollutant Discharge Elimination (NPDES) program. In accordance with the NPDES program, the State Water Resources Control Board (SWRCB) has adopted a General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) (CAS000002, Waste Discharge Requirements, Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ and Order 2012-0006-DWQ). The Construction General Permit applies to any construction activity affecting 1 acre or more. The focus of the permit is to minimize the potential effects of construction runoff on receiving water quality. The permit requires preparation of a stormwater pollution prevention plan (SWPPP) that identifies best management practices (BMPs) describing erosion control measures. Examples of typical construction BMPs to address water quality include using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils. The project is larger than 1 acre and would be required to comply with the Construction General Permit.

Project proponents are required to submit a Notice of Intent, a site map, a signed certification statement, an annual fee, and a SWPPP. The permit program is risk-based, wherein a project's risk is based on the project's potential to cause sedimentation and the risk of such sedimentation on the receiving waters. A project's risk determines its water quality control requirements, ranging from Risk Level 1, which consists of only narrative effluent standards, implementation of best management practices, and visual monitoring, to Risk Level 3, which consists of numeric effluent limitations, additional sediment control measures, and receiving water monitoring. Additional requirements include compliance with post-construction standards, preparation of rain event action plans, increased reporting requirements, and specific certification requirements for certain project personnel.

The SWPPP must include best management practices to reduce construction effects on receiving water quality by implementing erosion control measures and reducing or eliminating non-stormwater discharges. Project construction activities would include grading, excavation, and vegetation removal, which would disturb and expose soils to water erosion, potentially increasing the amount of silt and debris that could be discharged off-site. In addition, heavy equipment use and other vehicles on-site could result in oil, grease, and other related pollutant leaks and spills that could enter runoff. The project applicant would be required to prepare and comply with a SWPPP that would include pollution prevention measures (erosion and sediment control measures and measures to control non-stormwater discharges and hazardous spills), demonstrate compliance with all applicable local and regional erosion and sediment control standards, identify responsible parties, and include a detailed construction timeline. The SWPPP must also include best management practices to reduce construction effects on receiving water quality by implementing erosion control measures and reducing or eliminating non-stormwater discharges.

Examples of typical construction BMPs include but are not limited to using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; and installing sediment control devices such as gravel bags, inlet filters, fiber rolls, or silt fences to reduce or eliminate sediment and other pollutants from discharging to the drainage system or receiving waters. BMPs are recognized as effective methods to prevent or minimize the potential releases of pollutants into drainages, surface water, or groundwater. Project compliance with the NPDES permit and stormwater pollution prevention plan, coupled with the use of appropriate BMPs, which would be made a condition of approval on the project, would reduce potential water quality impacts during construction activities to less than significant.

Operation

Stormwater Runoff

The project site is undeveloped and slopes primarily toward the west. A small area on the site on the east side drains toward Wildflower Drive. An existing drainage swale drains toward the north in the project site interior. The project would result in the removal of the existing vegetation on the site, which would be replaced by buildings, landscaping, parking areas, and roadways. The existing drainage swale would be removed and replaced with storm drain piping. These changes would alter the existing drainage pattern on the site and would result in new impervious surfaces (rooftops, parking lots, and roadways) that would generate additional stormwater runoff compared to existing conditions.

Title 6, Chapter 9 of the City Municipal Code establishes the requirements for project compliance with the City's NPDES Permit No. CA0083313 (Order No. R5-2010-0102), issued by the San Francisco Bay Regional Water Quality Control Board. The City requires implementation of appropriate source control and site design measures and stormwater treatment measures for projects that create or replace 1 acre or more of impervious surface and projects that create or replace 10,000 square feet or more of impervious surface. Every application for a development project, including but not limited to a rezoning, tentative map, parcel map, conditional use permit, variance, site development permit, design review, or building permit that is subject to the development runoff requirements in the City's NPDES permit, must be accompanied by a stormwater control plan that meets the criteria in the most recent version of the Contra Costa Clean Water Program (CCCWP) Stormwater C.3 Guidebook.

To comply with the guidebook, projects must include appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address both soluble and insoluble stormwater runoff pollutant discharges and prevent increases in runoff flows from new development and redevelopment projects. The goal is to be accomplished primarily through the implementation of low impact development (LID) techniques. The goal of LID is to reduce runoff and mimic a site's predevelopment hydrology by minimizing disturbed areas and impervious cover, and then infiltrating, storing, detaining, and/or biotreating stormwater close to the source. LID uses principles such as preserving and re-creating natural landscape features and minimizing imperviousness to create a functional and appealing site drainage that treats stormwater as a resource rather than a waste product. It requires source control and landscaping that minimizes irrigation and runoff and promotes surface infiltration.

The project applicant has prepared a stormwater control plan that describes how post-construction stormwater runoff would be managed in accordance with the CCCWP Stormwater C.3 Guidebook. As described in the Preliminary Storm Water Control Plan (Meridian Associates 2016), the project has been designed to minimize the amount of impervious area to the extent practicable by reducing building footprints and street sections. A stormwater treatment plan showing water quality treatment facilities has been developed for the project (**Figure 4**). Stormwater would be diverted through landscape features and bioretention facilities (or basins), which would treat runoff through detention and infiltration in soil media prior to being collected in a sub-drain and conveyed to the city's storm drain system. Landscaped areas on all portions of the project would be designed with shallow ponding areas. Parking lot planters would be available for use as ponding areas, and many of the larger parking islands would be bioretention facilities. Single-family front and rear yards would be designed to be self-retaining areas for stormwater. Roof runoff in the residential areas would discharge to splash blocks for filtration in landscaped areas. Roof runoff in the commercial area would be conveyed to a bioretention facility.

Potential sources of pollution in stormwater runoff from the site would be generally limited to homeowner activities such as landscaping, vehicle washing and maintenance, and use of common household pollutants (i.e., paints, insecticides, and cleaners). The project proposes to treat these pollutants through a combination of retention, filtration, bioswales, and a bioretention basin. Additional proposed water quality treatment BMPs include storm drainage inlet markings, homeowner education, and measures to minimize the use of pesticides and fertilizers.

With implementation of the features described in the Preliminary Storm Water Control Plan, the project would comply with the requirements of the CCCWP Stormwater C.3 Guidebook and therefore would be in compliance with the City's NPDES permit. The impact would be less than significant.

Wastewater

The proposed project would generate wastewater from residential and commercial uses, which would be conveyed through the city's wastewater conveyance system to the Delta Diablo Wastewater Treatment Plant (WWTP). There would be no industrial discharges or other types of constituents in wastewater from the project that would adversely affect the quality of wastewater conveyed and treated at the WWTP. The project would not contribute to conditions that would affect the treatment plant's ability to meet waste discharge requirements. Therefore, the project would have a less than significant impact associated with wastewater discharge (see also subsection 16, Utilities and Service Systems).

b) **Less Than Significant Impact**. Domestic water service to the proposed project would be provided by the Contra Costa Water District (CCWD). CCWD does not use groundwater to meet any demand (CCWD 2015). Therefore, the proposed project would not contribute to the depletion of groundwater supplies. Site soils are relatively impermeable and groundwater is not present in shallow soils at the site, so recharge is limited under existing conditions. Project stormwater features would include infiltration-type systems, which would not substantially interfere with groundwater recharge. The project would have a less than significant impact.

c) **Less Than Significant Impact**. The project site is in the East Antioch Creek watershed. However, there are no natural streams or creeks on the site that connect to other surface water bodies in the watershed. The existing drainage swale would be removed, and all site runoff would be conveyed through a storm drain system. Although the proposed project would alter the site's existing drainage pattern and create new impervious surfaces, it would not result in substantial erosion or siltation because the project would be required to implement a SWPPP during construction and include LID features in project design to minimize runoff. Impacts would be less than significant.

d, e) **Less Than Significant Impact With Mitigation Incorporated.** The project would alter the drainage pattern on the site and would be a source of increased stormwater runoff from new impervious surfaces. As described in the project's Preliminary Storm Water Control Plan, the treatment system would include features for metering and flow control into the city's storm drain system. The use of on-site bioretention and infiltration facilities would minimize the potential for project stormwater flows to result in on- or off-site flooding or exceed the capacity of the city's storm drain system. Implementation of mitigation measure **MM 9.1** would ensure that there would be no net increase in stormwater runoff leaving the project site, and no on- or off-site flooding or exceedance of a drainage system would occur.

f) **Less Than Significant Impact**. Potential water quality impacts are evaluated in Items a) and c), above. Other than those described, the project would have no impacts.

g, h) **No Impact**. The project site is in Zone X, which the Federal Emergency Management Agency (FEMA) describes as an area of minimal flood hazard, usually depicted on Flood Insurance Rate Maps as above the 100-year flood level (FEMA Map Panel No. 06013C0331F and 06013C0332F, effective June 16, 2009). The proposed project would not place any structures within a 100-year flood hazard area. Therefore, the project would have no impact regarding flood flows.

i) **No Impact**. The project site is in an urbanized area and ranges from 66 to 168 feet above sea level. It is not protected by a levee system. According to information compiled for the Hillcrest Station Area Specific Plan EIR, the immediate area is not at risk of dam failure inundation (Dyett & Bhatia 2009, p. 3.9-5). Therefore, the project would not be exposed to flood inundation hazard, and there would be no impact.

j) **Less Than Significant Impact**. The project site is inland and is not located in a tsunami inundation area. There are no enclosed water bodies near the project site that could pose a seiche hazard. Although a portion of the undeveloped project site is on a slope, the area at the top of the slope is flat and developed with residential uses. Upon completion of construction, exposed soils would be covered with buildings and impervious surfaces. There would be no mudflow hazard. The project would have less than significant impacts related to tsunami, seiche, and mudflow.

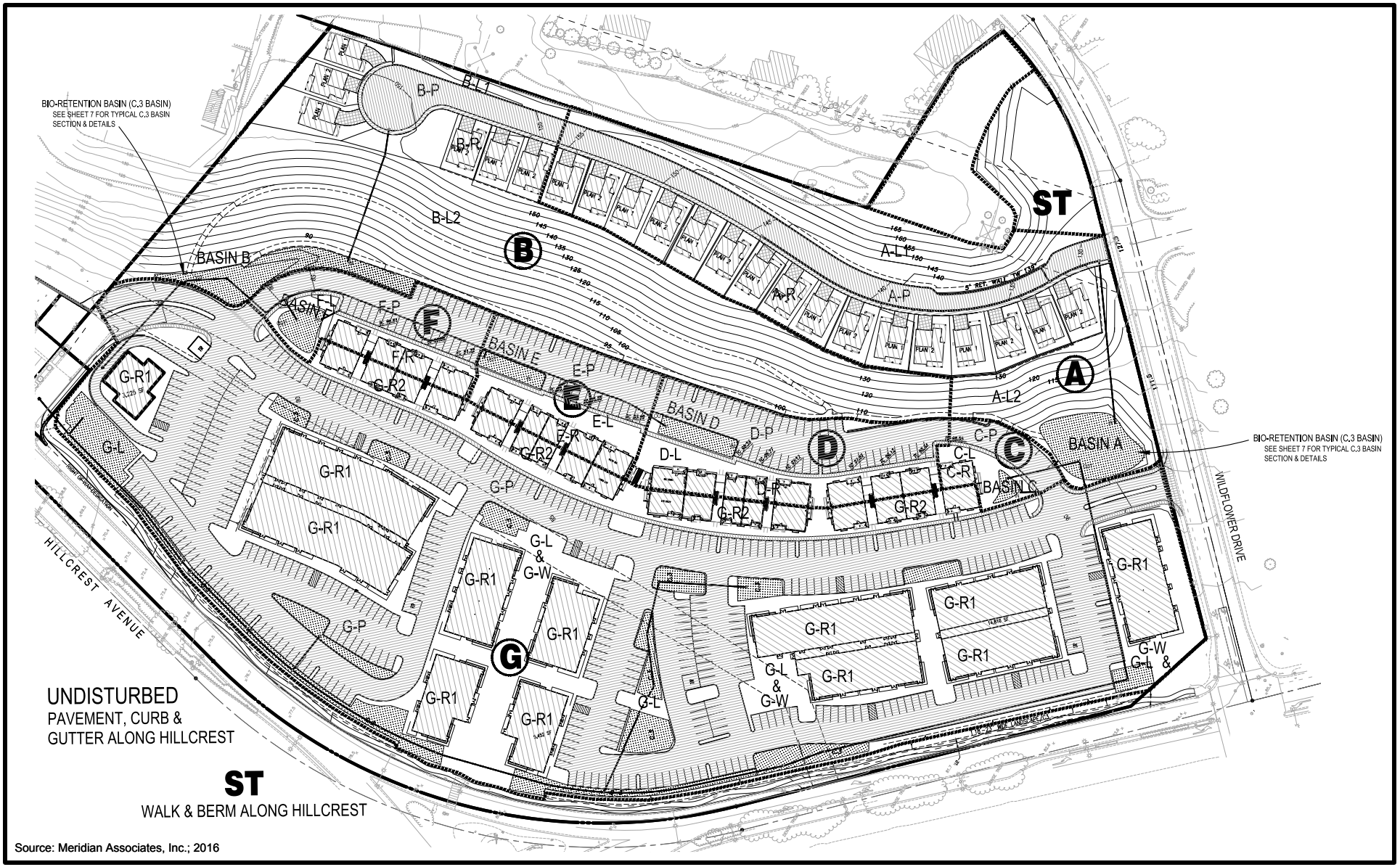
Mitigation Measures

MM 9.1 The project applicant shall prepare and submit for approval by the City's Community Development Department a hydraulic analysis demonstrating that the project's post-development runoff volume and flow rate would not exceed pre-development conditions.

Timing/Implementation: *Reviewed as part of construction plans, and verified prior to occupancy*

Enforcement/Monitoring: *City of Antioch Engineering and Development Services Division*

T:_CS\Work\Antioch, City of\Wildflower Station 156776\Figures



Source: Meridian Associates, Inc.; 2016

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FIGURE 4
Preliminary Storm Water Control Plan

Michael Baker INTERNATIONAL

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
10. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

DISCUSSION OF IMPACTS

a) **No Impact**. The project site is currently vacant and undeveloped. It is surrounded by urban development and roadways that provide access to areas surrounding the site as well as the project site. The project would not divide an established community. As such, the project would not physically divide an established community, and there would be no impact.

b) **Less Than Significant Impact**. The General Plan land use designation for the project site is Neighborhood/Community Commercial (NC) that is intended to place commercial uses adjacent to residential areas. While the designation allows some flexibility in land use, it is generally not intended to support mixed-use centers (vertical or horizontal). Because the current land use designation would not allow the project's proposed mixed uses with high-density housing, the project application has requested a General Plan amendment to change the land use designation to Mixed Use. The intent of the Mixed Use designation is to allow a wide variety of uses that can come together to meet the community's housing, shopping, employment, and institutional needs through efficient land use design. With the Mixed Use designation, both vertical mixed use (various types of uses integrated in individual buildings, such as commercial on the ground floor with residential uses above) and horizontal mixed use (individual buildings housing different types of uses in an integrated site plan) are appropriate. Small-lot single-family detached homes, multi-family attached homes, administrative and professional offices, banks and financial services, business support services, eating and drinking establishments, and other retail and recreational uses are permitted.

While the project does not offer vertical mixed use, it does offer horizontal mixed use with the intent of placing the commercial uses in close proximity to the high- and low-density housing. The site plan has been designed to efficiently use the project site to develop a center that would encourage pedestrian circulation and place goods and services directly adjacent to multiple types of housing. Consistent with the City's Housing Element policies requiring the provision of a variety of housing options, the project includes 22 single-family units for moderate- to above moderate-income housing, and 98 high-density condominium units adjacent to the commercial uses.

c) **No Impact**. The project site is not in an area covered under an approved habitat conservation plan or natural community conservation plan. The proposed project would not conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan. Thus, the project would have no impact.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
11. MINERAL RESOURCES. Would the project:				
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

DISCUSSION OF IMPACTS

a, b) **No Impact**. While there has been historic mineral extraction in the southwest region of the city, there are no locally important mineral resources delineated in the Antioch General Plan within or adjacent to the project site (Antioch 2003a). The project would not involve the loss of an available known mineral resource that would be of value to the region. Therefore, the project would have no impact.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
12. NOISE. Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or of applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e) For a project located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or a public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

BACKGROUND INFORMATION ON NOISE

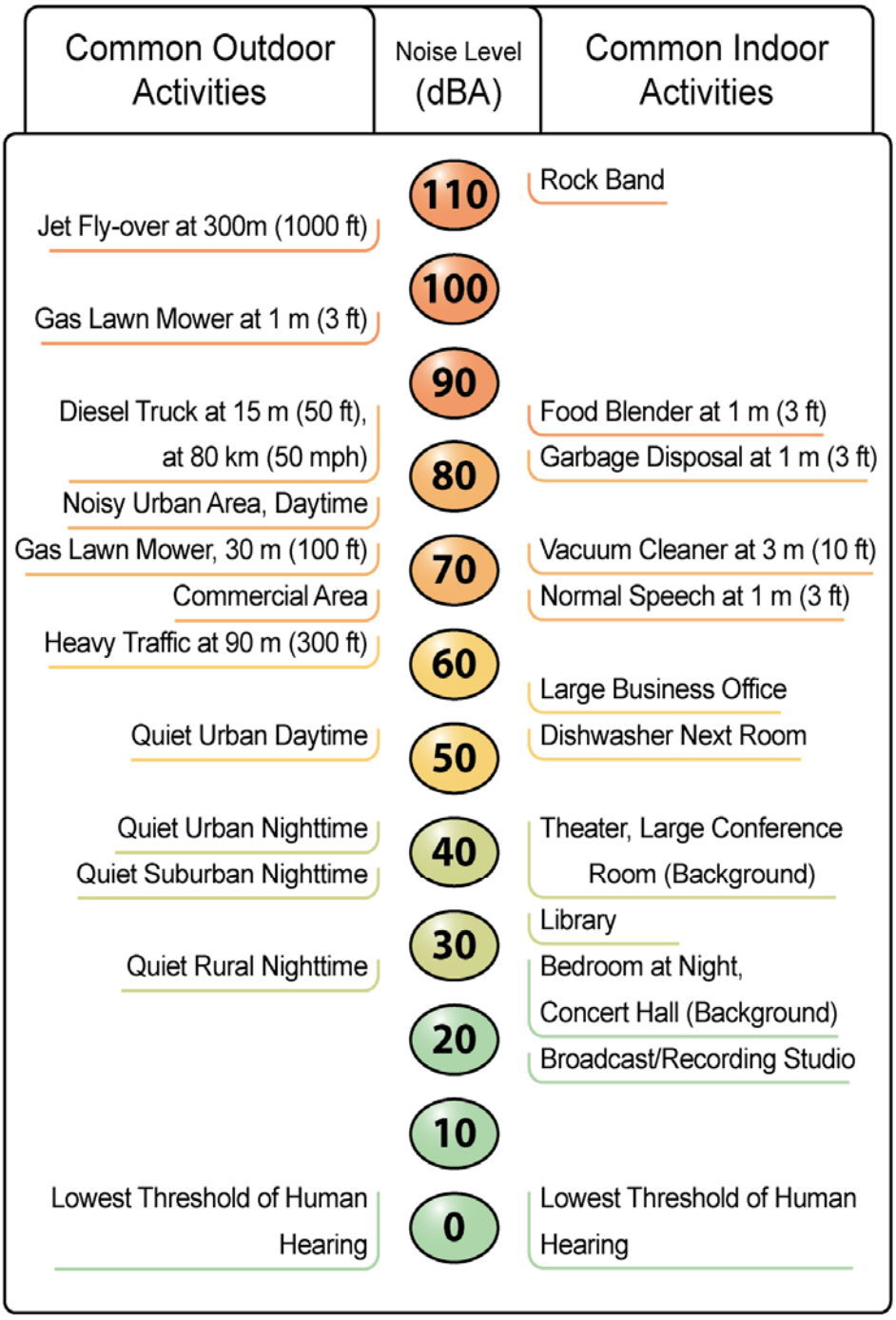
FUNDAMENTALS OF SOUND AND ENVIRONMENTAL NOISE

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), 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. A typical noise environment consists of a base of steady background noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These sources can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway. Perceptions of sound and noise are highly subjective from person to person.

The perceived loudness of sounds is dependent on 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. All noise levels reported in this section are in terms of A-weighted levels, but may be expressed as decibels (dB), unless otherwise noted. Common community noise sources and associated noise levels, in dBA, are depicted in **Figure 5**.

FIGURE 5
TYPICAL COMMUNITY NOISE LEVELS



Source: Caltrans 2012

Sound Propagation and Attenuation

Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source near the ground. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics. No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such soft dirt or grass, can absorb sound, so an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. For line sources, an overall attenuation rate of 3 dB per doubling of distance is assumed.

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dB, while a solid wall or berm reduces noise levels by 5 to 10 dB (FHWA 2006). The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dB with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dB or more.

NOISE DESCRIPTORS

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The L_{eq} is an average measure of sound energy over a given period of time, while the L_{dn} and CNEL are measures of community noise. Each is applicable to this analysis and defined in **Table 12-1**.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dB. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dB.

TABLE 12-1
DEFINITIONS OF ACOUSTICAL TERMS

Term	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micropascals (or 20 micronewtons per square meter), where 1 pascal is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micropascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 and 20,000 Hz. Infrasonic sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	L_{eq}, the equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	L_{dn}, the Day-Night Average Level, is a 24-hour average L_{eq} with a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
Community Noise Equivalent Level, CNEL	CNEL, the Community Noise Equivalent Level, is a 24-hour average L_{eq} with a 5 dBA "weighting" during the hours of 7:00 p.m. to 10:00 p.m. and a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

HUMAN RESPONSE TO NOISE

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60–70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings that can provide noise levels as low as 20 dBA and quiet, suburban, residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55–60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with more noisy urban residential or residential-commercial areas (60–75 dBA) or dense urban or industrial areas (65–80 dBA). Regarding increases in A-weighted noise levels (dBA), the following relationships should be noted for understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived by humans.
- 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 community response would be expected. An increase of 5 dBA is typically considered substantial.
- A 10 dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

EFFECTS OF NOISE ON PEOPLE

Hearing Loss

While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even in a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise, but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise.

The Occupational Safety and Health Administration (OSHA) has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over 8 hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors, the thresholds are about 15 dBA higher. Steady noise of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA L_{dn}. Typically, the highest steady traffic noise level during the daytime is roughly equal to the L_{dn} and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection, and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12–17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57–62 dBA L_{dn} with open windows and 65–70 dBA L_{dn} if the windows are closed. Levels of 55–60 dBA are common along collector streets and secondary arterials, while 65–70 dBA is a typical value for a primary/major arterial. Levels of 75–80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed; those facing major roadways and freeways typically need special glass windows with Sound Transmission Class (STC) ratings greater than 30 STC.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 55 dBA L_{dn}. At an L_{dn} of about 60 dBA, approximately 2 percent of the population is highly annoyed. When the L_{dn} increases to 70 dBA, the percentage of the population highly annoyed increases to about 12 percent. There is an increase in annoyance due to ground vehicle noise of approximately 1 percent per dBA for an L_{dn} of 60–70 dBA. For an L_{dn} of 70–80 dBA, each decibel increase increases the percentage of the population highly annoyed by about 2 percent. People appear to respond more adversely to aircraft noise. When the L_{dn} due to aircraft noise is 60 dBA, approximately 10 percent of the population is believed to be highly annoyed. Each decibel increase up to 70 dBA adds about 2 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase in aircraft noise results in about a 3 percent increase in the percentage of the population highly annoyed.

FUNDAMENTALS OF ENVIRONMENTAL GROUNDBORNE VIBRATION

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. The ground motion caused by vibration is measured as particle velocity in inches per second and in the United States is referenced as vibration decibels (VdB).

The background vibration velocity level in residential areas is usually around 50 VdB. The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible. Groundborne vibration is almost never annoying to people who are outdoors. Although the motion of the ground may be perceived, without the effects associated with the shaking of a building, the motion does not provoke the same adverse human reaction. In addition, the rumble noise that usually accompanies building vibration is perceptible only inside buildings (FTA 2006). As such, the range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.

The general human response to different levels of groundborne vibration velocity levels is described in **Table 12-2.**

TABLE 12-2
HUMAN RESPONSE TO DIFFERENT LEVELS OF GROUNDBORNE VIBRATION

Vibration Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception for many people.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Source: FTA 2006

In urban environments, such as the project area and Antioch as a whole, sources of groundborne vibration include construction activities, light rail transit, and heavy trucks and buses. Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction-related groundborne vibration levels. Rail operations are potential sources of substantial groundborne vibration depending on distance, the type and the speed of trains, and the type of railroad track. People's response to groundborne vibration has been correlated best with the velocity of the ground. The velocity of the ground is expressed on the decibel scale. The reference velocity is 1×10^{-6} inches per second. RMS, which equals 0 VdB and 1 inch per second, equals 120 VdB. Groundborne vibration levels from heavy trucks and buses are not normally perceptible, especially if roadway surfaces are smooth. Buses and trucks typically generate groundborne vibration levels of about 63 VdB at a distance of 25 feet when traveling at a speed of 30 miles per hour. Higher vibration levels can occur when buses or trucks travel at higher rates of speed or when the pavement is in poor condition. Vibration levels below 65 VdB are below the threshold of human perception.

SETTING

Hillcrest Avenue is a major north–south arterial roadway that provides access between retail areas, residential neighborhoods, and State Route 4. Hillcrest Avenue borders the project site on the west and is a major source of traffic noise in the area. Wildflower Drive is a two-lane collector street and borders the project on the east. Wildflower Drive is the closest source of traffic noise to the residential areas proposed as part of the project. Other sources of traffic noise include Davison Drive and Deer Valley Road to the west and SR 4 to the north. Commercial retail centers are located across Hillcrest Avenue to the southwest and adjacent to the northwest corner of the project. Noise sources in the retail areas include parking lots, building mechanical systems, and trash collection activities. An automated carwash facility is located across Hillcrest Avenue to the south.

Noise-Sensitive Receptors

Noise-sensitive land uses are those that may be subject to stress and/or interference from excessive noise. Noise-sensitive land uses include public schools, hospitals, and institutional uses such as churches, museums, and private schools. Typically, residential uses are also considered noise-sensitive receptors. Industrial and commercial land uses are generally not considered sensitive to noise. Noise-sensitive receptors in the project area include single-family homes in the project site vicinity. Single-family homes border the project site on the north and east sides. The closest sensitive receptors are four single-family residences to the north on Lotus Court. These residences would be adjacent to three of the project's proposed single-family homes. The closest existing noise-sensitive receptors to the retail component of the project are single-family homes 150 feet away, across Hillcrest Avenue to the west.

Existing Ambient Noise Levels

In order to quantify existing ambient noise levels in the project area, Michael Baker International conducted six 10-minute noise measurements (see **Appendix NOI**). The measurements were taken with a Larson Davis SoundExpert LxT precision sound level meter, which satisfies the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. Prior to the measurements, the SoundExpert LxT sound level meter was calibrated according to manufacturer specifications with a Larson Davis CAL200 Class I Calibrator.

The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the project site. Peak traffic hours for the project area are expected to occur between 4:00 p.m. and 6:00 p.m. Tuesday through Thursday. The short-term measurements were taken between 4:00 p.m. and 6:00 p.m. on Tuesday, June 27, 2017. The short-term (L_{eq}) measurements are considered representative of the noisiest hour of the day. The average noise levels and sources of noise measured at each location are listed in **Table 12-3.** Noise monitoring locations are shown on **Figure 6.**

TABLE 12-3
EXISTING NOISE MEASUREMENTS

Site #	Location	Time	Primary Noise Sources	Noise Level Statistics		
				L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)
1	End of Lobelia Court	4:29 PM	Residences, Traffic	50.5	46.5	55.4
2	Southeast project corner on Wildflower Drive	4:46 PM	Residences, Traffic	59.6	43.6	73.7
3	Wildflower Drive near Terrace View Avenue	5:01 PM	Traffic	62.4	47.6	75.7
4	Intersection of Wildflower Drive and Hillcrest Avenue	5:15 PM	Traffic, Carwash	70.6	54.4	85.7
5	Northwest project corner on Hillcrest Avenue	5:35 PM	Traffic	72.3	54.4	90.6
6	Intersection of Hillcrest Drive and Deer Valley Road	5:48 PM	Traffic	69.9	55.0	91.4

Notes: See Figure 4.12-2 for noise measurement locations.

As shown, the ambient noise levels measured near the project site ranged from 50.5 dB to 72.3 dB L_{eq}. The most common noise in the project vicinity is produced by vehicles (cars, trucks, buses, motorcycles). The drying cycle of an automated carwash facility approximately 300 feet from measurement site #4 was included in the recorded noise level. Traffic moving along roadways produces a sound level that remains relatively constant and is part of the city's minimum ambient noise level. Vehicular noise varies with the volume, speed, and type of traffic. Slower traffic produces less noise than fast-moving traffic. Trucks typically generate more noise than cars. Infrequent or intermittent noise also is associated with vehicles, including sirens, vehicle alarms, slamming of doors, garbage collection and construction vehicle activity, and honking of horns. These noises add to urban noise and are regulated by a variety of agencies.

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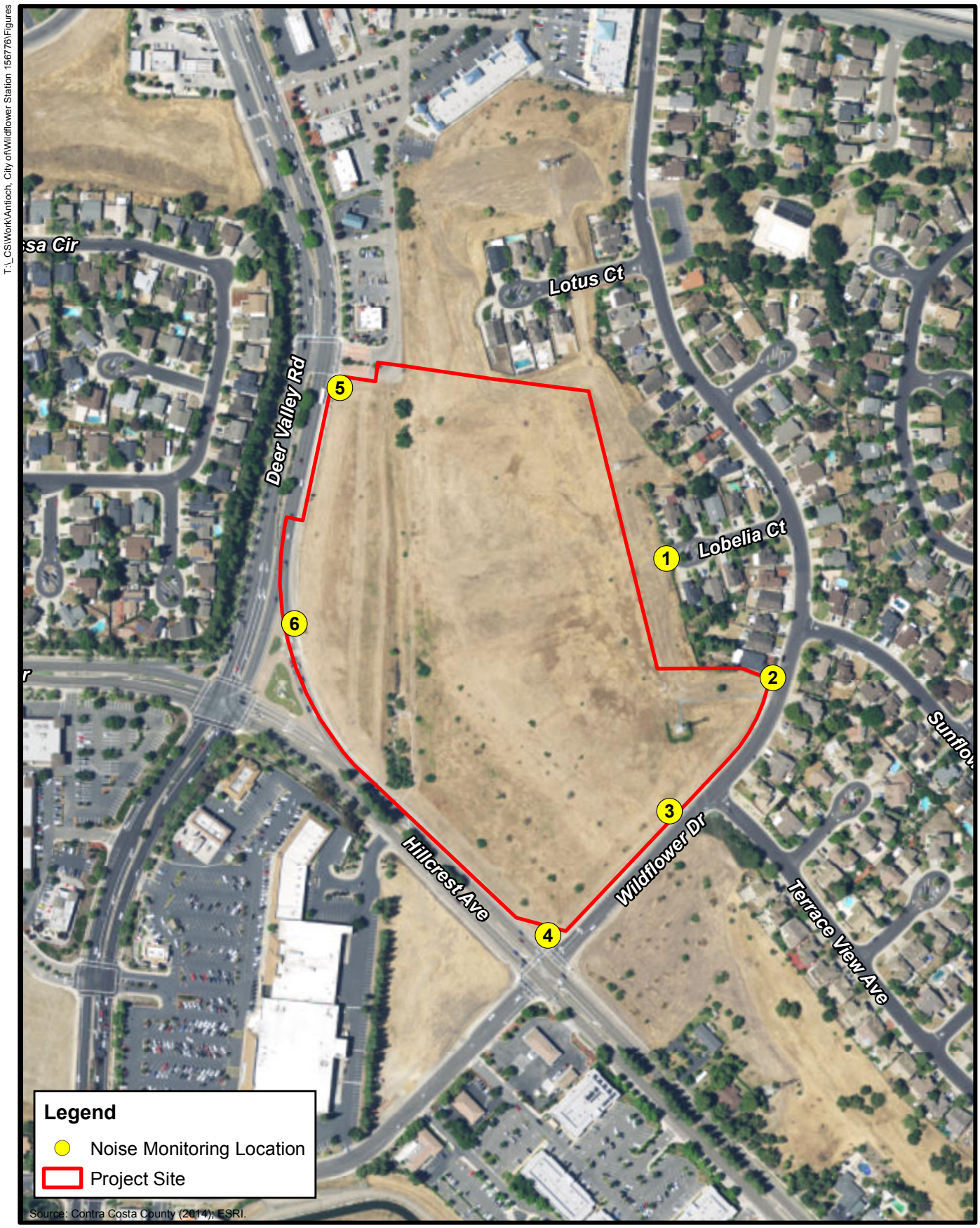

FIGURE 6
Noise Monitoring Locations

Michael Baker INTERNATIONAL

Existing Roadway Noise Levels

Existing roadway noise levels were calculated for the roadway segments in the vicinity of the project site using the Federal Highway Administration (FHWA) Highway Noise Prediction Model (FHWA-RD-77-108) and traffic volumes from the transportation impact analysis (Abrams Associates 2017; **Appendix NOI**). The model calculates the average noise level at specific locations based on traffic volumes, average speeds, and roadway geometry. The average vehicle noise rates (energy rates) utilized in the FHWA model were modified to reflect average vehicle noise rates identified for California by the California Department of Transportation (Caltrans). The Caltrans data shows that California automobile noise is 0.8 to 1.0 dB higher than national levels and that medium and heavy truck noise is 0.3 to 3.0 dB lower than national levels. The average daily noise levels along the roadway segments adjacent to the project site are presented in **Table 12-4**.

TABLE 12-4
EXISTING TRAFFIC NOISE LEVELS

Roadway Segment	Calculated Noise Levels (dBA)			
	CNEL @ 100 Feet from Roadway Centerline	Distance (feet) from Roadway Centerline to:		
		70 CNEL Noise Contour	65 CNEL Noise Contour	60 CNEL Noise Contour
Hillcrest Avenue				
East 18th Street to Slatten Ranch Road	60.0	—	—	101
Larkspur Drive to Hillcrest Crossroads	63.5	—	79	170
Hillcrest Crossroads to Deer Valley Road	65.3	—	105	226
Deer Valley Road to Wildflower Drive	62.9	—	73	157
State Route 4				
SR 4 at Hillcrest Avenue	74.5	201	433	933
Wildflower Drive				
Deer Valley Road to Hillcrest Avenue	50.5	—	—	—
Hillcrest Avenue to Terrace View Court	46.6	—	—	—

*Source: Based on traffic volume data in the transportation impact study prepared by Abrams Associates (2017). Traffic data for SR 4 from State Highway Traffic Data (Caltrans 2015). Traffic noise levels were calculated using the FHWA roadway noise prediction model. Refer to **Appendix NOI** for traffic noise modeling assumptions and results.*

Notes: ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level; — = Roadway noise level does not exceed contour noise level

DISCUSSION OF IMPACTS

a, c, d) **Less Than Significant Impact.**

Short-Term Noise Generation

Project construction would temporarily increase noise levels on the project site. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., land clearing, grading, excavation, paving). Noise generated by construction equipment, including earthmovers, material handlers, and portable

generators, can reach high levels. Typical noise levels associated with individual construction equipment are summarized in **Table 12-5.** As depicted in the table, noise levels associated with individual construction equipment used for typical construction projects can reach levels of up to approximately 90 dBA L_{max} (FTA 2006). Operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings.

TABLE 12-5
TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment	Typical Noise Level (dBA) at 50 Feet from Source	
	L_{max}	$L_{eq(hour)}$
Air Compressor	80	76
Backhoe/Front End Loader	80	76
Compactor (Ground)	80	73
Concrete Mixer Truck	85	81
Concrete Mixer (Vibratory)	80	73
Concrete Pump Truck	82	75
Concrete Saw	90	83
Crane	85	77
Dozer/Grader/Excavator/Scraper	85	81
Drill Rig Truck	84	77
Generator	82	79
Gradall	85	81
Hydraulic Break Ram	90	80
Jackhammer	85	78
Impact Hammer/Hoe Ram (Mounted)	90	83
Pavement Scarifier/Roller	85	78
Paver	85	82
Pneumatic Tools	85	82
Pumps	77	74
Truck (Dump/Flat Bed)	84	80

Source: FTA 2006

During project construction, exterior noise levels could affect the nearest existing sensitive receptors. As discussed above, the nearest sensitive receptors are single-family residences adjoining the project property line near the northeast project corner. Temporary construction noise levels could reach an hourly L_{eq} of up to 83 dB for certain pieces of construction equipment. However, construction activities would be intermittent and would not be concentrated near residential property lines.

Due to the temporary, intermittent nature of construction noise, there are no specific noise level limits regulating construction noise; however, Antioch Municipal Code Section 5-17.05 prohibits construction activity to certain hours during the day. In addition, City of Antioch General Plan Noise Policy 11.6.2 requires a project applicant to submit a construction-related noise mitigation plan to the City for review and approval and implement specific control measures. Per General Plan Policy 11.6.2 and Municipal Code Section 5-17.05, the following requirements will be imposed on the project as a condition of approval:

- The project applicant shall submit a construction-related noise mitigation plan to the City for review and approval. The plan should depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the project through the use of such methods as:
  - The construction contractor shall use temporary noise-attenuation fences, where feasible, to reduce construction noise impacts on adjacent noise sensitive land uses.
  - During all project site excavation and grading on-site, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
  - The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.
  - Construction activity shall be prohibited:
    - weekdays prior to 7:00 a.m. and after 6:00 p.m.;
    - weekdays within 300 feet of occupied dwellings, prior to 8:00 a.m. and after 5:00 p.m.;
    - Saturdays, prior to 9:00 a.m. and after 5:00 p.m., irrespective of distance from the occupied dwellings;
    - Sundays and public holidays.
- The construction-related noise mitigation plan required shall also specify that haul truck deliveries be subject to the same hours specified for construction equipment. Additionally, the plan shall denote any construction traffic haul routes where heavy trucks would exceed 100 daily trips (counting those both to and from the construction site). To the extent feasible, the plan shall denote haul routes that do not pass sensitive land uses or residential dwellings. Lastly, the construction-related noise mitigation plan shall incorporate any other restrictions imposed by the City.

Adherence to the City's construction noise ordinance and General Plan policies would ensure construction noise is mitigated to the extent feasible and restricted during noise-sensitive hours. Therefore, this impact would be less than significant.

Long-Term Noise Generation

Traffic Noise

The project is forecast to generate 137 net new vehicle trips on the surrounding roadway system during the AM peak hour and 353 net new trips during the PM peak hour (Abrams Associates 2017). These vehicle trips would result in an increase in traffic-generated noise. Traffic noise levels were calculated using the FHWA roadway noise prediction model (FHWA-RD-77-108) based on California vehicle reference noise emission factors. Additional input data included vehicle speeds and roadway widths. Predicted noise levels were calculated at a distance of 100 feet from the near-travel-lane centerline. **Table 12-6** shows the calculated roadway noise level in the project vicinity as a result of the project. Traffic data was obtained from the transportation impact analysis prepared for the project by Abrams Associates (2017; **Appendix NOI**).

TABLE 12-6
EXISTING PLUS PROJECT TRAFFIC NOISE LEVELS

Roadway Segment	Calculated Noise Levels (dBA)			
	CNEL @ 100 Feet from Roadway Centerline	Distance (feet) from Roadway Centerline to:		
		70 CNEL Noise Contour	65 CNEL Noise Contour	60 CNEL Noise Contour
Hillcrest Avenue				
East 18th Street to Slatten Ranch Road	60.2	—	—	104
Larkspur Drive to Hillcrest Crossroads	63.6	—	81	174
Hillcrest Crossroads to Deer Valley Road	65.5	—	108	234
Deer Valley Road to Wildflower Drive	63.2	—	76	164
State Route 4				
SR 4 at Hillcrest Avenue	74.5	201	433	933
Wildflower Drive				
Deer Valley Road to Hillcrest Avenue	50.9	—	—	—
Hillcrest Avenue to Terrace View Court	47.4	—	—	—

*Source: Based on traffic volume data in the transportation impact study prepared by Abrams Associates (2017). Traffic data for SR 4 from State Highway Traffic Data (Caltrans 2015). Traffic noise levels were calculated using the FHWA roadway noise prediction model. Refer to **Appendix NOI** for traffic noise modeling assumptions and results.*

Notes: ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level

Section 11.6.1 of the City of Antioch General Plan (2003a) specifies the following noise level objectives that would be applicable to the proposed project:

- Single-family residential: 60 dBA CNEL within rear yards
- Multi-family residential: 60 dBA CNEL within interior open spaces
- Commercial: 70 dBA CNEL at the front setback

As shown in **Table 12-6**, the 60 dBA CNEL contour for SR 4 is 933 feet. The closest residential property in the proposed project is more than 1,100 feet from the highway centerline. The closest residential area in the proposed project is approximately 300 feet from the roadway centerline of Hillcrest Avenue. The 60 dBA CNEL in that road segment is 243 feet. Only SR 4 exceeds a 70 dBA CNEL with a contour at 201 feet. The commercial buildings in the proposed project are more than 1,000 feet from SR 4. Therefore, because future project occupants would not be exposed to noise levels in excess of the City's noise objectives for specific land uses, the impact is less than significant.

As shown in **Table 12-7** and **Table 12-8**, segments of Hillcrest Avenue currently have a calculated 60 dBA CNEL noise level contour of more than 100 feet from the roadway centerline. Existing residential areas within 100 feet of the roadway centerline of Hillcrest Avenue re exposed to noise levels greater than 60 dBA CNEL. For development in areas which exceed noise objectives due to existing development, the City requires noise mitigation when the proposed project will increase the existing noise level by more than 3.0 dBA. **Table 19** compares traffic noise increases in the project area with the threshold.

TABLE 12-7
PREDICTED CHANGES IN TRAFFIC NOISE LEVELS – EXISTING PLUS PROJECT CONDITIONS

Roadway Segment	CNEL @ 100 Feet from Roadway Centerline (dBA)		Increase (dBA)	Threshold (dBA)	Impact	Existing Land Use Adjoining Segment
	Without Project	With Project				
Hillcrest Avenue						
East 18th to Slatten Ranch	60.0	60.2	0.2	>3.0	No	Commercial & Residential
Larkspur to Hillcrest Cr.	63.5	63.6	0.1	>3.0	No	Commercial & Residential
Hillcrest Cr. to Deer Valley	65.3	65.5	0.2	>3.0	No	Residential
Deer Valley to Wildflower	62.9	63.2	0.3	>3.0	No	Commercial
Wildflower Drive						
Deer Valley to Hillcrest	50.5	50.9	0.4	>3.0	No	Commercial & Residential
Hillcrest to Terrace View	46.6	47.4	0.8	>3.0	No	Residential

*Source: Based on traffic volume data in the transportation impact study prepared by Abrams Associates (2017). Traffic data for SR 4 from State Highway Traffic Data (Caltrans 2015). Traffic noise levels were calculated using the FHWA roadway noise prediction model. Refer to **Appendix NOI** for traffic noise modeling assumptions and results.*

As shown in **Table 12-7**, increases in vehicular traffic would result in a maximum increase of 0.8 dB in the project area. A 3 dB increase in noise is considered a just-perceivable difference. Because the proposed project's traffic-generated noise level increase would be less than 3 dB along the roadway segments analyzed, the project would have a less than significant impact related to traffic noise.

Cumulative Traffic Noise

Under cumulative plus project conditions, the project would generate approximately 60 additional trips during the AM peak hour and 49 additional trips during the PM peak hour over and above what the site would generate under the existing General Plan designation and zoning (Abrams Associates 2017). Predicted traffic noise levels for the year 2040 with and without the proposed project are shown in **Table 12-8**. As shown, the maximum increase in CNEL due to the project would be 0.6 dB. Since the proposed project would increase noise levels by less than 3 dB along the roadway segments analyzed, the project would have a less than cumulatively considerable impact on traffic noise.

TABLE 12-8
PREDICTED CHANGES IN YEAR 2040 TRAFFIC NOISE LEVELS – CUMULATIVE PLUS PROJECT CONDITIONS

Roadway Segment	CNEL @ 100 Feet from Roadway Centerline (dBA)		Increase (dBA)	Threshold (dBA)	Impact	2040 Land Use Adjoining Segment
	Without Project	With Project				
Hillcrest Avenue						
East 18th to Slatten Ranch	62.0	62.0	0	>3.0	No	Commercial & Residential
Larkspur to Hillcrest Cr.	65.8	65.8	0	>3.0	No	Commercial & Residential
Hillcrest Cr. to Deer Valley	67.5	67.5	0	>3.0	No	Commercial & Residential
Deer Valley to Wildflower	64.3	64.3	0	>3.0	No	Commercial
Wildflower Drive						
Deer Valley to Hillcrest	51.1	51.4	0.3	>3.0	No	Commercial & Residential
Hillcrest to Terrace View	47.2	47.8	0.6	>3.0	No	Commercial & Residential

*Source: Based on traffic volume data in the transportation impact study prepared by Abrams Associates (2017). Traffic noise levels were calculated using the FHWA roadway noise prediction model. Refer to **Appendix NOI** for traffic noise modeling assumptions and results.*

Other Operational Noise

In addition to traffic-related noise, the project would generate other long-term operational nose, mainly associated with the project's retail component. Operational noise sources would include parking lot activities, building mechanical equipment, retail store deliveries, and refuse collections. These noise sources and the times of day they would be generated are similar to the noise generated by commercial development to the west across Hillcrest Avenue and adjacent to the northwest corner of the project. The closest existing noise-sensitive receptors to the proposed retail area are single-family homes 300 feet across Hillcrest Avenue. The closest residential uses are multi-family buildings 100 feet to the west of the retail area.

Unshielded heating, ventilation, and air conditioning (HVAC) systems can generate noise levels as high as L_{eq} 90 dBA at 3 feet (EPA 1971). Because point sources of noise near the ground attenuate 6 dB for every doubling of distance, the maximum noise due to retail building HVAC systems at the proposed multi-family building exteriors would be L_{eq} 59.5 dB. Assuming the HVAC systems would typically operate from 10:00 a.m. to 8:00 p.m. during the summer, the CNEL would be approximately 60 dB. This noise level would not exceed the City's noise level objective of 60 dB for interior open spaces.

Parking areas may include noise events from vehicle movement, engine starting and stopping, doors slamming, car alarms and horns, shopping carts, and conversations. For the proposed project, parking areas would be dispersed around the buildings throughout the retail and multi-family residential areas. Because there is no concentrated center of noise activity, parking lot activities would create a small, incremental increase in the background noise typical of urban settings. Impacts due to project operational noise would be less than significant.

b) **Less Than Significant Impact.** Project construction would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. This impact discussion uses Caltrans's (2002) recommended standard of 0.2 inches per second peak particle velocity (PPV) with respect to the prevention of structural damage for normal buildings. **Table 12-9** displays vibration levels for typical construction equipment.

TABLE 12-9
TYPICAL CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Equipment	Peak Particle Velocity at 25 Feet (inches per second)
Large Bulldozer	0.089
Caisson Drilling	0.089
Loaded Truck	0.076
Rock Breaker	0.059
Jackhammer	0.035
Small Bulldozer/Tractor	0.003

Source: FTA 2006; Caltrans 2004

The nearest existing structures are single-family homes on Lobelia Court, approximately 75 feet from the project site boundary. However, construction activities would occur throughout the project site and would not be concentrated at the point closest to the nearest structures. Based on the vibration levels presented in **Table 12-9**, ground vibration generated by heavy-duty equipment would not be anticipated to exceed approximately 0.09 inches per second PPV at 25 feet. Therefore, the use of construction equipment would most likely not result in a groundborne vibration velocity level above 0.2 inches per second; predicted vibration levels at the nearest off-site structures would not exceed recommended criteria. Additionally, this impact would be temporary and would cease completely when construction ends. Once operational, the project would not be a source of groundborne vibration. Therefore, impacts would be less than significant.

e) **No Impact.** The project site is not located within the limits of the noise contours of any airports. The closest public airports are Byron Airport, Buchanan Field, and Rio Vista Municipal Airport, each approximately 14 miles away. The project would have no impact.

f) **No Impact.** The closest private airstrip is the Funny Farm airstrip in Brentwood, approximately 8 miles away. The project would have no impact.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
13. POPULATION AND HOUSING. Would the project:				
a) Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

DISCUSSION OF IMPACTS

a) **Less Than Significant Impact**. As of January 1, 2017, Antioch had an estimated population of 114,241 (DOF 2017). The Antioch General Plan projects the city's 2025 population at 117,500 (Antioch 2003a). The City's 2015–2023 Housing Element determined that the average household size in Antioch is 3.22 (Antioch 2015). Assuming 3.22 persons per household, the project would add approximately 387 residents to the city.

The project site is currently designated by the General Plan as Neighborhood/Community Commercial. The Neighborhood/Community Commercial designation has a maximum allowable development intensity of 0.4 floor area ratio (FAR). Thus, under the current land use designation, the project site could be developed with up to 375,836 square feet of commercial space. The project proposes to construct 120 dwelling units and 89,422 square feet of commercial space. While the project proposes more dwelling units than assumed in the General Plan, it also proposes significantly less commercial square footage than allowed in the General Plan and would result in overall building intensity and associated population growth that would not differ substantially from that allowed under the General Plan and evaluated in the General Plan EIR. The proposed development intensity and anticipated population increase would be within the growth projections assumed in the General Plan. Therefore, the project would not induce substantial population growth beyond that assumed in the General Plan. Further, the project site is in an urbanized area served by major roadways and infrastructure and would not extend roads or other infrastructure or otherwise indirectly induce growth elsewhere in the city. The project would have a less than significant impact.

b, c) **No Impact**. The proposed project would be constructed on what is currently vacant land. The project would not involve the demolition of any housing and would not otherwise displace any housing or people. Therefore, the project would have no impact.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
14. 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 following public services:				
a) Fire protection?	☐	☐	☒	☐
b) Police protection?	☐	☐	☒	☐
c) Schools?	☐	☐	☒	☐
d) Parks?	☐	☐	☒	☐
e) Other public facilities?	☐	☐	☒	☐

DISCUSSION OF IMPACTS

a–e) **Less Than Significant Impact.**

Fire Protection

The Contra Costa County Fire Protection District (CCCFPD) covers Antioch for fire protection services. The district 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 (Antioch 2016b). The nearest fire station is Station 88 located at 4288 Folsom Drive, approximately 1.2 miles southeast of the project site. The CCCFPD reviewed the project plans. Given the fire protection district's large coverage area and the proposed project's small scale, and because the project area is currently served by the CCCFPD, the project would not require the construction of new or improvements to existing fire facilities. Therefore, the project would have a less than significant impact on fire protection.

Police Protection

Police protection services are provided by the Antioch Police Department (APD), which is located at 300 L Street, approximately 4.2 road miles northwest of the project site. The department consists of 103 sworn and 35 non-sworn employees (Antioch 2017c). The General Plan identifies a performance ratio of 1.2 to 1.5 police officers per 1,000 residents. However, the PD staffing ratio falls short of this standard at approximately 0.90 officer per 1,000 residents. The City established Community Facilities District No. 2016-1 (Police Protection) in 2016 to assess a tax on new residential development. Revenue from the Community Facilities District (CFD) is used to cover the increased costs of police services to new development. The project applicant would be assessed a per unit tax through the CFD to fund any necessary service expansion. While APD staffing is currently below the

General Plan performance ratio, the project area is currently patrolled by the department. The project would not require construction of any new police facilities, the construction of which could result in physical environmental effects. As such, the project would have a less than significant impact.

Schools

The Antioch Unified School District (AUSD) serves approximately 19,000 students across Antioch and parts of Oakley. AUSD consists of 14 elementary schools, 4 middle schools, and 6 high schools. The nearest schools to the project area are Belshaw Elementary School, Bidwell Continuation High School, Muir Elementary School, Jack London Elementary School, and Mno Grant Elementary School (AUSD 2017).

As shown in **Table 14-1**, the project is expected to generate approximately 37 new students: 17 new elementary school students, 8 middle school students, and 12 high school students.

TABLE 14-1
PROJECT STUDENT GENERATION

	Elementary	Middle	High	Totals
Multi-Family Development				
AUSD Generation Rates	0.10	0.045	0.08	
Project Student Generation	9.80	4.41	7.84	22.05
Single-Family Detached Development				
AUSD Generation Rates	0.31	0.15	0.21	
Project Student Generation	6.82	3.3	4.62	14.74
Student Generation Total	16.62	7.71	12.46	36.79

Source: Antioch 2009b

While the project applicant would be required to pay school impact fees to help fund the construction of new public school facilities in accordance with Senate Bill 50, given the small number of students anticipated to be generated by the project, the need for school improvements or expansions is not anticipated. The payment of school impact fees would fully mitigate the project's potential impact on schools. The project would have a less than significant impact.

Parks and Recreation

See discussion in subsection 15, Recreation.

Other Public Facilities

The proposed project would result in a negligible increase in the city's overall population and would not be expected to generate a significant increase in demand for any other public services. This impact would be less than significant.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
15. RECREATION.				
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?	☐	☐	☒	☐
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?	☐	☐	☒	☐

DISCUSSION OF IMPACTS

a, b) **Less Than Significant Impact**. The city contains 33 developed public parks and a total of over 400 acres of parks and open space. These parks range in size from Deerfield Park (0.5 acre) to Prewett Family/Aquatic Park (99 acres). Park facilities in the city include barbecue pits, baseball fields, basketball courts, picnic tables, soccer fields, children play areas, dog parks, and trails and open space (Antioch 2009b; 2016). According to the City of Antioch General Plan EIR (2003), 5 acres of parks and open space must be provided for every 1,000 residents. Based on the city's current (2017) population of 114,241 (DOF 2017), the City must provide approximately 571 acres of parks and open space.

The City of Antioch requires either a dedication of land (at the rate of 0.015 acre per single-family unit and 0.0095 acre per multi-family unit) or an in-lieu fee to be provided on behalf of the developer (Antioch 2003a). The project applicant would be required to pay the applicable in-lieu fees. Payment of these fees would fully mitigate the project's potential impact on recreation. The potential environmental impacts of construction of the proposed project's recreational facilities are discussed throughout this Initial Study. Where necessary, mitigation measures are included to reduce any potential impacts to less than significant levels. The impact would be less than significant.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
16. TRANSPORTATION/TRAFFIC. Would the project:				
a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e) Result in inadequate emergency access?	☐	☐	☒	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☒	☐

DISCUSSION OF IMPACTS

The following discussion is based primarily on the transportation impact analysis prepared for the proposed project by Abrams Associates Traffic Engineering (2017).

a, b) **Less Than Significant Impact**. A transportation impact analysis (TIA) was prepared to evaluate the project's effects on intersections in the study area. Eleven intersections were evaluated, the locations of which are shown in **Figure 5** and comprise the study area for purposes of the TIA. Intersection levels of service (LOS) were determined for peak-hour traffic volumes and intersection configurations for 11 intersections for the following conditions: existing; existing plus project; cumulative (2040) without the project based on planned and approved projects and the most recent version of the Countywide Travel Demand Model; and cumulative plus project. The TIA identified "peak hours" as generally between 7:30 AM and 8:30 AM and from 4:30 PM to 5:30 PM on weekdays for adjacent street traffic. Traffic counts at the study intersections were conducted in January 2016 when local schools were in session. **Table 16-1** lists the intersections and associated LOS for existing weekday AM and PM peak hour.

The City of Antioch has established a standard to maintain LOS D or better at all intersections, and the Contra Costa Countywide Transportation Plan has a policy also requiring LOS D or better. The East County Action Plan has established LOS D as the standard for Hillcrest Avenue and Deer Valley Road, which are identified as Routes of Regional Significance. For Caltrans facilities, operational standards and significance criteria are established by the Contra Costa County Transportation Authority (CCTA) acting as the designated Congestion Management Agency (CMA) and responsible for updating and adopting a Congestion Management Plan. As the CMA, the Contra Costa County Transportation Authority establishes traffic LOS standards for all state highway facilities in the county.

As shown by the data, all study intersections currently operate acceptably (LOS D or better), with the exception of intersection #2 (Sunset Drive/Hillcrest Avenue), which operates at LOS E during the PM peak hour. This intersection was still under construction at the time the TIA was being prepared. Additional turn lanes planned for this intersection are forecast to substantially improve the PM level of service at the intersection.

Existing plus Project Impacts

The project is forecast to generate 137 net new vehicle trips on the surrounding roadway system during the AM peak hour and 353 net new trips during the PM peak hour. As shown in **Table 16-1**, with the addition of project traffic, all intersections would continue to operate at an acceptable level of service, with the exception of intersection #2 (Sunset Drive/Hillcrest Avenue). However, with the planned lane improvements, the intersection would operate acceptably, even with the addition of project traffic. The impact would be less than significant.

TABLE 16-1
EXISTING AND EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

Intersection		Control	Peak Hour	Existing		Existing plus Project	
				Delay	LOS	Delay	LOS
1	E. 18th St & Hillcrest Ave	Signal	AM	23.3	C	23.6	C
			PM	28.6	C	30.6	C
2	Sunset Dr & Hillcrest Ave	Signal	AM	13.3	B	13.3	B
			PM	18.7	B	19.1	B
3	SR 4 westbound ramps & Hillcrest Ave	Signal	AM	13.0	B	13.4	B
			PM	24.5	C	28.4	C
4	SR 4 eastbound ramps & Hillcrest Ave	Signal	AM	14.8	B	15.0	B
			PM	19.1	B	20.0	B
5	Larkspur Dr /E. Tregallas Rd & Hillcrest Ave	Signal	AM	26.2	C	26.6	C
			PM	17.7	B	18.0	B
6	Hillcrest Crossroads & Hillcrest Ave	Signal	AM	2.1	A	3.4	A
			PM	3.8	A	6.8	A
7	Davison Dr/Hillcrest Ave & Deer Valley Rd	Signal	AM	30.9	C	31.9	C
			PM	31.2	C	32.7	C
8	Deer Valley Rd & Wildflower Dr	Signal	AM	6.6	A	6.8	A
			PM	8.5	A	8.9	A
9	Hillcrest Ave & Wildflower Dr	Signal	AM	8.2	A	9.2	A
			PM	9.4	A	11.2	B
10	Project entrance & Wildflower Dr	Side street stop	AM	—	—	9.1	A
			PM	—	—	9.4	A
11	Single-family residential entrance & Wildflower Dr	Side street stop	AM	9.1	A	9.2	A
			PM	9.5	A	9.7	A

Source: Abrams Associates 2017, Table 5

Notes: LOS results presented in terms of average intersection delay in seconds per vehicle. For stop-controlled intersections, the results for the worst side-street approach are presented.

– intersection does not exist

Cumulative plus Project Impacts

Development of the project site under its existing General Plan designation, which would allow retail uses, was assumed in the cumulative (2040) analysis because development was accounted for in the City's General Plan EIR and in the County Travel Demand Model. With the General Plan amendment, the project would generate approximately 60 additional trips during the AM peak hour and 49 additional trips during the PM peak hour over and above what the site would generate under the existing General Plan designation and zoning. The differences in trip generation are summarized in **Table 16-2**.

TABLE 16-2
TRIP GENERATION (CUMULATIVE CONDITIONS)

Land Use	Average Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Forecast Trip Generation Proposed Project							
Shopping Center, Single-Family Residential, Condominiums	3,898	55	82	137	187	166	353
Forecast Trip Generation Current Zoning and General Plan Designation							
Shopping Center	3,408	44	33	77	149	155	304
Net Increase in Future Trip Generation with Proposed Project							
	490	11	49	60	38	11	49

Source: Abrams Associates 2017, Table 7

Cumulative without the project and cumulative plus project intersection delay and LOS are shown in **Table 16-3**. As shown in the table, all intersections would continue to have LOS D or better operations during the weekday AM and PM peak hours, with the exception of four intersections: #1 (E. 18th Street/Hillcrest Avenue); #4 (SR 4 eastbound ramps/Hillcrest Avenue); #5 (Larkspur Drive/Hillcrest Avenue); and #7 (Davison Drive/Deer Valley Road). These four intersections are forecast to have unacceptable operations under cumulative buildout conditions regardless of whether the proposed project is implemented. Cumulative buildout impacts at these four intersections were evaluated in the East Contra Costa BART Extension Final EIR, which assumed the Hillcrest eBART station, and the eBART Corridor EIR Addendum. The eBART project was conditioned to contribute its fair share to implement mitigation to meet LOS D at the E. 18th Street/Hillcrest Avenue and Davison Drive/Deer Valley Road intersections. There was no feasible mitigation for the SR 4 eastbound ramps/Hillcrest Avenue and the Larkspur Drive/Hillcrest Avenue intersections.

The proposed project would increase traffic volumes at the four identified intersections by less than 1 percent. The project's contribution would not be cumulatively considerable, and the cumulative impact would be less than significant.

TABLE 16-3
CUMULATIVE (2040) AND CUMULATIVE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

Intersection		Control	Peak Hour	Cumulative (2040) without Project		Cumulative (2040) Plus Project	
				Delay	LOS	Delay	LOS
1	E. 18th St & Hillcrest Ave	Signal	AM	38.2	D	38.5	D
			PM	**>80**	**F**	**>80**	**F**
2	Sunset Dr & Hillcrest Ave	Signal	AM	22.7	C	22.7	C
			PM	28.6	C	28.7	C
3	SR 4 westbound ramps & Hillcrest Ave	Signal	AM	15.2	B	15.4	B
			PM	40.9	D	41.6	D
4	SR 4 eastbound ramps & Hillcrest Ave	Signal	AM	20.7	C	21.0	C
			PM	**71.3**	**E**	**71.9**	**E**
5	Larkspur Dr /E. Tregallas Rd & Hillcrest Ave	Signal	AM	35.2	D	35.7	D
			PM	**56.2**	**E**	**57.4**	**E**
6	Hillcrest Crossroads & Hillcrest Ave	Signal	AM	2.3	A	3.0	A
			PM	4.6	A	5.7	A
7	Davison Dr/Hillcrest Ave & Deer Valley Rd	Signal	AM	49.9	D	50.2	D
			PM	**61.0**	**E**	**61.3**	**E**
8	Deer Valley Rd & Wildflower Dr	Signal	AM	7.2	A	7.3	A
			PM	10.1	B	10.2	B
9	Hillcrest Ave & Wildflower Dr	Signal	AM	9.2	A	9.8	A
			PM	11.4	B	11.9	B
10	Project entrance & Wildflower Dr	Side street stop	AM	—	—	9.1	A
			PM	—	—	9.0	A
11	Single-family residential entrance & Wildflower Dr	Side street stop	AM	9.2	A	9.4	A
			PM	9.7	A	9.9	A

Source: Abrams Associates 2017, Table 6

Notes: LOS results presented in terms of average intersection delay in seconds per vehicle. For stop-controlled intersections, the results for the worst side-street approach are presented.

Shaded bold indicates unacceptable intersection operations.

– intersection does not exist

Project-related queuing was evaluated at the entrances to the commercial portion of the project. The results are presented in **Table 16-4**. Under cumulative plus project conditions, the 95th percentile queues are not forecast to exceed the storage provided. The project's contribution would be less than cumulatively considerable, and the cumulative impact would be less than significant.

TABLE 16-4
CUMULATIVE PLUS PROJECT PEAK-HOUR QUEUING ANALYSIS

Intersection		Turn Lane	Available Storage (feet)	Period	95th Percentile Queue (feet)
6	Hillcrest Crossroads & Hillcrest Ave	Westbound	70	AM	22
				PM	61
		Southbound (left)	125	AM	29
				PM	70
10	Project entrance & Wildflower Dr	Northbound (left)	0	AM	< 20
				PM	< 20
		Eastbound	75	AM	< 20
				PM	< 20

Source: Abrams Associates 2017, Table 8

c) **No Impact.** The project is a mixed-use project and would not result in a change in air traffic patterns or increase air traffic levels. As described in subsection 8, Hazards and Hazardous Materials, there are no public or private airports in the project vicinity. Therefore, no impact on air traffic patterns would occur.

d) **Less Than Significant Impact With Mitigation Incorporated.** The main access to the retail/condominium portion of the site would be from an existing traffic signal on Hillcrest Avenue just north of Deer Valley Road. There would also be a secondary access to the condominiums and shopping center on Wildflower Drive. In addition, a new roadway serving the single-family homes would connect to Wildflower Drive opposite Terrace View Drive. Level of service and Caltrans signal warrants were reviewed to confirm that the project would not require traffic signals at the two new access points on Wildflower Drive. No internal site circulation or access issues were identified that would cause a traffic safety problem or any unusual traffic congestion or delay. No capacity problems were identified at the project entrances with the proposed lane configurations. However, the TIA did recommend improvement measures that would reduce travel speeds and improve safety. Although not required to reduce a significant impact, these recommendations are included as mitigation measure **MM 16.1**. The project would provide an adequate supply of off-street parking. Based on the results of the TIA, the project would not result in design hazards or conditions that would result in inadequate emergency access, and operational impacts would be less than significant.

During construction, trucks, heavy equipment, and other construction-related vehicles would travel on local roadways to and from the site. An estimated 10 pieces of heavy equipment could be transported on and off the site each month throughout the construction period. The project would also require construction materials deliveries. An estimated approximately 50 construction workers would access the site daily. This could temporarily affect traffic operations on affected roadways. The combination of construction workers and non-worker deliveries and visitors and other activities would generate traffic. The project is estimated to require parking for up to approximately 70 vehicles during the peak construction period. Temporary construction-related traffic operations could result in short-term impacts on local roads, which is potentially significant.

With implementation of a traffic control plan, as required in mitigation measure **MM 16.2**, temporary construction-related traffic operations impacts would be less than significant.

e) **Less Than Significant Impact**. Sufficient emergency access is determined by such factors as the number of access points, roadway width, and proximity to fire stations. The land use plan for the project includes a primary entrance on Hillcrest Avenue along with secondary access onto Wildflower Drive. All lane widths within the project would be adequate to accommodate emergency vehicles, and the final emergency vehicle access plan would be subject to final approval by the Contra Costa County Fire Protection District. Emergency response impacts would be less than significant.

f) **Less Than Significant Impact.** Most roadways in the project area have sidewalks, and there are bicycle lanes on Hillcrest Avenue, on Deer Valley Road, and on portions of Wildflower Drive and Larkspur Drive. Three major public transit operators provide service within or adjacent to the project area: BART, Tri-Delta Transit, and County Connection. The approved eBART extension that will connect with BART at the Bay Point Station is currently under construction in the median of SR 4, with a planned station at Hillcrest Avenue. Tri Delta Transit routes operating adjacent to the project site include routes 379, 380, 383, 385, 388, 390, and 392. The terminus of the County Connection is at the Hillcrest Park-and-Ride lot in Antioch.

The project would generate additional pedestrian and bicycle traffic and would increase patronage on bus lines in the area, but the demand can be accommodated by existing facilities and planned improvements. The proposed project would not interfere with any existing bus routes and would not remove or relocate any existing bus stops. Project-generated traffic would not degrade level of service conditions or increase delay on any roadway segments currently used by bus transit in the project study area, and therefore it would not affect transit times (Abrams Associates 2017). The project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, nor would it otherwise decrease the performance or safety of such facilities. Impacts would be less than significant.

Mitigation Measures

MM 16.1 The project applicant shall re-mark the segment of Larkspur Drive between Wildflower Drive and Bluebell Drive to have one lane in each direction with bicycle lanes and left turn lanes.

Timing/Implementation: *Prior to project completion*

Enforcement/Monitoring: *City of Antioch Community Development Department*

MM 16.2 Prior to the issuance of grading and building permits, the project applicant shall be required to submit a traffic control plan to the City for approval. The requirements of the plan would include, but would not be limited to:

- Truck drivers would be notified of and required to use the most direct route between the project site and SR 4, as determined by the Public Works Department.

- All site ingress and access shall occur only at the main driveways to the project site, and construction activities may require installation of temporary traffic signals, as determined by the Public Works Department.
- Specifically designated travel routes for large vehicles shall be monitored and controlled by flaggers for large construction vehicle ingress and egress.
- Warning signs indicating frequent truck entry and exit shall be posted on adjacent roads.
- If import and export of material to the site becomes a traffic nuisance, the City Engineer may limit the hours in which the activities can take place.
- Construction employee parking shall be on the project site or in off-site parking lots to eliminate conflicts with nearby residential areas.
- Construction may be staggered so the construction worker parking demand can be met by using on-site parking;
- Emergency response providers shall be notified of the construction schedule a minimum of two weeks in advance.

Timing/Implementation: *Prior to issuance of grading and building permits*

Enforcement/Monitoring: *City of Antioch Community Development Department*

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
17. 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:				
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)?	☐	☐	☐	☒
b) A resource is 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.	☐	☐	☐	☒

SETTING

CONCEPTS AND TERMINOLOGY FOR IDENTIFICATION OF TRIBAL CULTURAL RESOURCES

Tribal cultural resources are defined in CEQA as a site, feature, place, cultural landscape, sacred place, or object with cultural value to a California Native American tribe, which may include non-unique archeological resources previously subject to limited review under CEQA.

ASSEMBLY BILL 52 NATIVE AMERICAN CONSULTATION

Assembly Bill (AB) 52 requires the lead agency (in this case the City of Antioch) to begin consultation with any California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project prior to the release of a negative declaration or mitigated negative declaration if (1) the California Native American tribe requested to the lead agency, in writing, to be informed by the lead agency through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the tribe, and (2) the California Native American tribe responds, in writing, within 30 days of receipt of the formal notification and requests the consultation (Public Resources Code Section 21080.3.1[d]). Two tribes, the Ione Tribe of Miwok Indians and Torres Martinez Desert Cahuilla Indians, have requested notification of projects occurring in Antioch.

The City has offered consultation to these two tribes in accordance with AB 52. Furthermore, the City requested AB 52 consultation with all tribes listed on the Native American Heritage Council (NAHC) contact list for Contra Costa County. Notification of availability for consultation was sent to a total of seven tribes on November 16, 2016. One tribe, the Wilton Rancheria, responded requesting consultation for the project on November 22, 2016. The City responded on December

20, 2016 by requesting a field meeting. Wilton Rancheria received the City's request on December 27, 2016, but the City did not receive a response.

No tribal cultural resources (as defined in Public Resources Code Section 21074) were identified on the project site or adjacent parcels.

See **Appendix CUL** for the AB 52 consultation log.

DISCUSSION OF IMPACTS

a, b) **No Impact.** No Native American tribes have identified tribal cultural resources pursuant to AB 52; therefore, no tribal cultural resources could be identified in the project area. As such, there are no known tribal cultural resources (as defined in Public Resources Code Section 21074) in the project area. Therefore, the project would have no impact on tribal cultural resources.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
18. UTILITIES AND SERVICE SYSTEMS. WOULD THE PROJECT:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider that 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?	☐	☐	☒	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

DISCUSSION OF IMPACTS

a) **Less Than Significant Impact.** Wastewater generated in Antioch is conveyed to and treated at the Delta Diablo Wastewater Treatment Plant (WWTP), located at 2500 Pittsburg-Antioch Highway and operated by the Delta Diablo Sanitation District. The district provides water resource recovery services for the City of Antioch, the City of Pittsburg, and the unincorporated community of Bay Point, serving a population of nearly 200,000. Delta Diablo services 54 square miles, maintaining six pump stations and five equalization storage facilities with 4 million gallons of storage. Water resource recovery services consist of conventional treatment of wastewater, recycled water production and distribution, pollution prevention, energy recovery, beneficial reuse of biosolids, street sweeping, and household hazardous waste collection. After secondary treatment, the effluent is either discharged through a deep-water outfall to New York Slough or further processed through the Recycled Water Facility. The WWTP is permitted by the San Francisco Bay Regional Water Quality Control Board (Order No. R2-2014-0030, NPDES No. CA0038547) and is permitted for up to 19.5 million gallons per day (mgd) average dry weather flow (Delta Diablo 2016).

The proposed project would generate wastewater from residential and commercial uses, which would be conveyed through the city's wastewater conveyance system to the Delta Diablo WWTP. No industrial discharges or other types of constituents in wastewater from the project would adversely affect the quality of wastewater conveyed and treated at the WWTP. Therefore, the project would not contribute to conditions that would affect the plant's ability to meet waste discharge requirements.

The project would generate approximately 30,422 gallons of wastewater per day (approximately 0.03 mgd).[4] The addition of project wastewater flows, when combined with the WWTP current flows (12.7 mgd as of 2014) (Pittsburg 2014) would remain essentially unchanged and would not exceed the plant's permitted capacity. Therefore, the proposed project would not cause or contribute to an exceedance of any wastewater treatment requirements, and the impact would be less than significant impact.

b) **Less Than Significant Impact**.

Water. The proposed project would generate a demand of 63,855 gallons per day (gpd) (0.064 mgd or 71.5 acre-feet per year) of potable water.

According to the Contra Costa Water District (2015) Urban Water Management Plan, the CCWD does not anticipate any supply deficits in normal years or single-dry years throughout the 25-year planning horizon. In future years, multiple-dry year conditions may result in supply shortfalls of up to approximately 30,000 acre-feet (15 percent of demand). The CCWD's water supply reliability goal is to meet 100 percent of demand in normal years and a minimum of 85 percent of demand during a drought. In 2015, which was considered a dry year, the CCWD had a drought pricing program for households using more than 400 gallons of water per day (CCWD 2015). The CCWD's share of the current capacity at the water treatment plants is 35 million gallons per day (mgd) of the 120 mgd permitted at the two facilities operated by the district. The additional project demand of 0.064 mgd is minimal compared with the facilities' operating capacity. As such, the project would have a less than significant impact on water facilities.

Wastewater. As stated above, the project would result in a negligible increase in wastewater, and no new or expanded treatment facilities would be required. Therefore, the project would have a less than significant impact related to wastewater facilities.

c) **Less Than Significant Impact**. See Item e) in subsection 9, Hydrology and Water Quality. The City requires the project applicant to submit a stormwater control plan and a drainage plan. The project's storm drainage system would be designed to comply with Section E.12.e(ii)(d) of the NPDES General Permit for Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (Order No. 2013-0001-DWQ), which requires the project site design to achieve an 85 percent capture rate. The project's stormwater would flow into the city's existing storm drain system.

[4] Calculated using wastewater unit flow factors in the City's (2014) Wastewater Collection System Master Plan (Table 2-4): 22 single-family residential units x 220 gpd/unit + 98 multi-family units x 170 gpd/unit + 89,422 sf commercial x 0.1 gpd/sf = 30,442 gpd (0.03 mgd).

All stormwater controls were designed in accordance with the Clean Water Program guidelines, California Stormwater Quality Association standards, and the City of Antioch's Urban Water Management Plan. Because the project would connect to an existing storm drain, the project would not require new or the expansion of existing storm drainage facilities. As such, the project would have a less than significant impact on stormwater facilities.

d) **Less Than Significant Impact**. See Item b).

e) **Less Than Significant Impact**. See Item b).

f) **Less Than Significant Impact**. Republic Services provides solid waste collection, disposal, recycling, and yard waste services in Antioch, including at 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 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, with approximately 12 million cubic yards (16 percent of total capacity) used to date (CalRecycle 2017a).

Based on California's statewide disposal rates of 4.9 pounds per resident per day and 11.4 pounds per employee per day, the project would conservatively be expected to result in the disposal of approximately 2,041 pounds of solid waste per day (1.02 tons per day) that would be disposed of at the Keller Canyon Landfill (CalRecycle 2017b). With the available capacity remaining at Keller Canyon Landfill, sufficient capacity would be available to accommodate the project's solid waste disposal needs. Therefore, the impact would be less than significant.

g) **Less Than Significant Impact**. During project construction, disposal of construction debris would be accomplished in compliance with City regulations including the City's Construction and Demolition Debris Recycling Ordinance (Antioch Municipal Code Title 6, Chapter 3, Article II), which requires the diversion of 65 percent of construction waste materials. The City also has in place a household hazardous materials service. The Delta Household Hazardous Waste Collection Facility accepts house and garden products, automotive care products, paint, personal care products, and a variety of miscellaneous products listed on the Delta Diablo website (Delta Diablo 2016). As stated above, the project site would be serviced by Republic Services for solid waste. As such, the project would comply with all applicable solid waste regulations for both project construction and operation and would have a less than significant impact.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
19. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of rare or endangered plants or animals, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
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.	☐	☒	☐	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

DISCUSSION OF IMPACTS

a) **Less Than Significant Impact With Mitigation Incorporated**. As discussed throughout this Initial Study/Mitigated Negative Declaration, the proposed project would not result in any significant impacts that cannot be mitigated to a level of less than significant. As discussed in subsection 4, Biological Resources, with mitigation incorporated, the proposed project would result in less than significant impacts on special-status species. As discussed in subsection 5, Cultural Resources, the project site does not contain any significant historical resources that could be affected by project construction.

b) **Less Than Significant Impact With Mitigation Incorporated**. A significant impact may occur if the project, in conjunction with related projects, would result in impacts that are less than significant when viewed separately but would be significant when viewed together. When considering the proposed project in combination with other past, present, and reasonably foreseeable future projects in the project vicinity, the proposed project would not have the potential to cause impacts that would be cumulatively considerable. As discussed throughout this Initial Study/Mitigated Negative Declaration, the proposed project would not result in any significant impacts after mitigation in any environmental issue areas. In all cases, the impacts associated with the project are limited to the project site or are minor, such that they would not result in a substantial contribution to any cumulative impacts.

c) **Less Than Significant Impact With Mitigation Incorporated**. The proposed project does not have the potential to significantly adversely affect humans, either directly or indirectly, once mitigation measures are implemented. Based on the findings of this Initial Study/Mitigated Negative Declaration, the project would not have a substantial impact on human beings.

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