PUBLIC DRAFT
ENVIRONMENTAL IMPACT REPORT

FOR THE

2014 BRENTWOOD GENERAL PLAN UPDATE

SCH# 2014022058

APRIL 2014

Prepared for:

City of Brentwood
Community Development Department
150 City Park Way
Brentwood, CA 94513

Prepared by:

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De Novo Planning Group

A Land Use Planning, Design, and Environmental Firm

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DRAFT EIR

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Figures

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Appendices

PURPOSE

The City of Brentwood (City) as lead agency, determined that the 2014 General Plan project (2014 General Plan, General Plan, or project) is a "project" within the definition of the California Environmental Quality Act (CEQA), and requires the preparation of an Environmental Impact Report (EIR). This Draft EIR has been prepared to evaluate the environmental impacts associated with implementation of the project. This EIR is designed to fully inform decision-makers in the City, other responsible and trustee agencies, and the general public of the potential environmental consequences of approval and implementation of the General Plan. A detailed description of the proposed project, including the components and characteristics of the project, project objectives, and how the EIR will be used, is provided in Chapter 2.0 (Project Description).

AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

This Draft EIR addresses environmental impacts associated with the project that are known to the City, raised during the Notice of Preparation (NOP) scoping process, or were raised during preparation of the Draft EIR. This Draft EIR addresses the potentially significant impacts associated with aesthetics/visual resources, agricultural/forest resources, air quality, biological/natural resources, cultural resources, geology/soils/minerals, greenhouse gases/climate change, hazards, hydrology/water quality, land use/population, noise, public services/recreation, transportation/circulation, utilities, and cumulative impacts. During the NOP process, six comment letters were received from interested agencies, organizations, and individuals. The comments are summarized in Chapter 1.0 (Introduction), and are also provided in Appendix A.

ALTERNATIVES TO THE PROPOSED PROJECT

The CEQA Guidelines require an EIR to describe a reasonable range of alternatives to the project or to the location of the project which would reduce or avoid significant impacts, and which could feasibly accomplish the basic objectives of the proposed project. The alternatives analyzed in this EIR include the following:

- Alternative 1: No Project Alternative. Under Alternative 1, the City would not adopt the General Plan Update. The existing Brentwood General Plan would continue to be implemented and no changes to the General Plan, including the Land Use Map, Circulation Diagram, goals, policies, or actions would occur. Subsequent projects, such as amending the Municipal Code (including the zoning map) and the City's Design Guidelines, would not occur. The existing General Plan Land Use Map is shown on Figure 3.10-3.

- Alternative 2: Economic Development Alternative. Alternative 2 would revise the General Plan Land Use Map to place more emphasis on identifying areas for commercial and industrial growth and less emphasis on future residential development. This alternative emphasizes providing adequate land for a range of commercial, office, and industrial uses and would convert more of the Planning Area to urban uses. Figure 5.0-1 depicts the Land

Use Map proposed for Alternative 2. This alternative was developed to reduce exposure of sensitive receptors to traffic noise.

- Alternative 3: Residential Growth Alternative. Alternative 3 provides for a balance of job-creating and residential development land uses within the city limits, and has a reduced amount of growth within the Planning Area when compared to Alternative 2 and the existing General Plan (Alternative 1). This alternative reflects areas identified for growth through the General Plan Update public input process and provides for more significant residential development. While this alternative would result in more residential growth than the proposed General Plan, existing General Plan, or Alternative 2, it would convert less agricultural and undeveloped land in the Planning Area to urban uses than the existing General Plan or Alternative 2. Figure 5.0-2 depicts the Land Use Map proposed for Alternative 3. This alternative was developed to reduce impacts associated with scenic resources and agricultural resources.

A comparative analysis of the proposed project and each of the project alternatives is provided in Table ES-1 below. The table includes a numerical scoring system, which assigns a score of "2," "3," or "4" to the proposed project and each of the alternatives with respect to how each alternative compares to the proposed project in terms of the severity of the environmental topics addressed in this EIR. A score of "3" indicates that the alternative would have the same level of impact when compared to the proposed project. A score of "2" indicates that the alternative would have a better (or reduced) impact when compared to the proposed project. A score of "4" indicates that the alternative would have a worse (or increased) impact when compared to the proposed project. The project alternative with the lowest total score is considered the environmentally superior alternative.

TABLE ES-1: COMPARISON OF ALTERNATIVES TO THE PROPOSED PROJECT				
ENVIRONMENTAL ISSUE	PROPOSED PROJECT	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Aesthetics	3 - Same	4- Worse	4- Worse	3 – Same
Agricultural Resources	3 - Same	4- Worse	4- Worse	4- Worse
Air Quality	3 – Same	4- Worse	4- Worse	3 – Same
Biological Resources	3 – Same	4- Worse	4- Worse	4- Worse
Cultural Resources	3 – Same	3 – Same	3 – Same	3 – Same
Geology and Soils	3 – Same	3 – Same	3 – Same	3 – Same
Greenhouse Gases and Climate Change	3 – Same	4- Worse	4- Worse	3 – Same
Hazards and Hazardous Materials	3 – Same	3 – Same	3 – Same	3 – Same
Hydrology and Water Quality	3 – Same	4- Worse	3 – Same	3 – Same
Land Use and Population	3 – Same	3 – Same	3 – Same	3 – Same
Noise	3 – Same	4- Worse	2 - Better	4- Worse
Public Services and Recreation	3 – Same	4- Worse	3 – Same	3 – Same
Transportation and Circulation	3 – Same	4- Worse	4- Worse	3 – Same
Utilities	3 – Same	4- Worse	4- Worse	3 – Same
Cumulative Impacts	3 – Same	4- Worse	4- Worse	4- Worse
Irreversible Effects	3 – Same	4- Worse	4- Worse	4- Worse
SUMMARY	**48**	**60**	**56**	**53**

As shown in Table ES-1, the proposed project is the environmentally superior alternative when looked at in terms of all potentially significant environmental impacts. However, the purpose of the alternatives analysis is to identify a project alternative that reduces the severity of one or more significant impacts that would result from implementation of the proposed project. While Alternative 3 has the next lowest score when compared to the proposed project and the other alternatives, Alternative 3 fails to reduce the severity of any of the significant and unavoidable impacts of the proposed project.

Alternative 2 would reduce the severity of noise impacts associated with sensitive receptor exposure to traffic noise sources. Overall, the proposed General Plan is the environmentally

superior alternative. However, Alternative 2 is the most effective in terms of reducing one or more of the significant impacts of the proposed project. As such, Alternative 2 is the environmentally superior alternative for the purposes of this EIR analysis.

SUMMARY OF IMPACTS AND MITIGATION MEASURES

In accordance with the CEQA Guidelines, this EIR focuses on the significant effects on the environment. The CEQA Guidelines defines a significant effect as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project. A less than significant effect is one in which there is no long or short-term significant adverse change in environmental conditions. Some impacts are reduced to a less than significant level with the implementation of mitigation measures and/or compliance with regulations. "Beneficial" effect is not defined in the CEQA Guidelines, but for purposes of this EIR a beneficial effect is one in which an environmental condition is enhanced or improved.

The environmental impacts of the proposed project, the impact level of significance prior to mitigation, the proposed mitigation measures to mitigate an impact, and the impact level of significance after mitigation are summarized in Table ES-2.

TABLE ES-2: PROJECT IMPACTS AND PROPOSED MITIGATION MEASURES

ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
AESTHETICS AND VISUAL RESOURCES			
Impact 3.1-1: General Plan implementation could result in substantial adverse effects on visual character, including impacts to scenic vistas or scenic resources	PS	*Mitigated to the greatest extent feasible through General Plan Policies and Actions. No additional feasible mitigation is available.*	SU
Impact 3.1-2: General Plan implementation could result in the creation of new sources of nighttime lighting and daytime glare (Less than Significant)	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
AGRICULTURAL AND FOREST RESOURCES			
Impact 3.2-1: General Plan implementation would result in the conversion of farmlands, including Prime Farmland, Unique Farmland, and Farmland of Statewide Importance	PS	*Mitigated to the greatest extent feasible through General Plan Policies and Actions. No additional feasible mitigation is available.*	SU
Impact 3.2-2: General Plan implementation may result in conflicts with existing Williamson Act Contracts	PS	*Mitigated to the greatest extent feasible through General Plan Policies and Actions. No additional feasible mitigation is available.*	SU
AIR QUALITY			
Impact 3.3-1: The General Plan would not conflict with or obstruct implementation of the applicable air quality plan	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.3-2: General Plan implementation would not cause health risks associated with	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS

CC – cumulatively considerable *LCC – less than cumulatively considerable* *LS – less than significant*

PS – potentially significant *SU – significant and unavoidable*

ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
toxic air contaminants			
Impact 3.3-3: The General Plan would not create objectionable odors	LS	*None Required*	LS
Impact 3.3-4: The General Plan would not conflict with Regional Plans	LS	*None Required*	LS
BIOLOGICAL AND NATURAL RESOURCES			
Impact 3.4-1: General Plan implementation could have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.4-2: General Plan implementation could have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.4-3: General Plan implementation could have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling,	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
hydrological interruption, or other means			
Impact 3.4-4: General Plan implementation would not 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	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.4-5: The General Plan would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance	LS	*None Required*	LS
Impact 3.4-6: General Plan implementation 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	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
CULTURAL RESOURCES			
Impact 3.5-1: General Plan implementation could result in a substantial adverse change in the significance of a historical or archaeological resource	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.5-2: Implementation of the General Plan could lead to the disturbance of human remains	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
Impact 3.5-3: General Plan implementation may result in damage to or the destruction of paleontological resources	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
GEOLOGY, SOILS, AND MINERALS			
Impact 3.6-1: General Plan implementation has the potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.6-2: General Plan implementation has the potential to result in substantial soil erosion or the loss of topsoil	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.6-3: General Plan implementation has the potential to result in development 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	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.6-4: General Plan implementation has the potential to result in development on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
Impact 3.6-5: General Plan implementation does not have the potential to have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.6-6: General Plan implementation could 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 or known mineral resource that would be of value to the region and the residents of the state	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
GREENHOUSE GASES AND CLIMATE CHANGE			
Impact 3.7-1: General Plan implementation could generate GHGs, either directly or indirectly, that may have a significant effect on the environment	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.7-2: General Plan implementation would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
HAZARDS			
Impact 3.8-1: General Plan implementation has the potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
hazardous materials, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment			
Impact 3.8-2: General Plan implementation has the potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.8-3: General Plan implementation has the potential to have projects located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.8-4: General Plan implementation is not located within an airport land use plan, two miles of a public airport or public use airport, or within the vicinity of a private airstrip, and would not result in a safety hazard for people residing or working in the project area	LS	*None Required*	LS
Impact 3.8-5: General Plan implementation does not have the potential to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.8-6: General Plan implementation does not have the potential to expose people or structures to a significant risk of loss, injury	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands			
HYDROLOGY AND WATER QUALITY			
Impact 3.9-1: General Plan implementation could result in a violation of water quality standards or waste discharge requirements	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.9-2: General Plan implementation could result in the depletion of groundwater supplies or interfere substantially with groundwater recharge	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.9-3: General Plan implementation could alter the existing drainage pattern in a manner which would result in substantial erosion, siltation, flooding, or polluted runoff	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.9-4 General Plan implementation could otherwise substantially degrade water quality	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.9-5 General Plan implementation could place housing and structures 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	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.9-6: General Plan implementation	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS

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would not expose people or structures to a significant risk of loss, injury, or death involving flooding as a result of failure of a levee or dam, seiche, tsunami, or mudflow			
LAND USE AND POPULATION			
Impact 3.10-1: General Plan implementation has the potential to physically divide an established community	LS	*None Required*	LS
Impact 3.10-2: General Plan implementation has the potential to conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted to avoid or mitigate an environmental effect	LS	*None Required*	LS
Impact 3.10-3: General Plan implementation has the potential to induce substantial population growth	LS	*None Required*	LS
Impact 3.10-4: General Plan implementation does not have the potential to displace substantial numbers of people or existing housing	LS	*None Required*	LS
NOISE			
Impact 3.11-1: General Plan implementation may result in exposure to significant traffic noise sources	PS	*Mitigated to the greatest extent feasible through General Plan Policies and Actions. No additional feasible mitigation is available.*	SU

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
Impact 3.11-2: General Plan implementation may result in exposure to excessive railroad noise sources	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.11-3: Implementation of the General Plan could result in the generation of excessive stationary noise sources	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.11-4: General Plan implementation may result in an increase in construction noise sources	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.11-5: General Plan implementation may result in construction vibration	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.11-6: General Plan implementation may result in exposure to groundborne vibration	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.11-7: General Plan implementation may result in cumulative noise impacts	PS	*Mitigated to the greatest extent feasible through General Plan Policies and Actions. No additional feasible mitigation is available.*	CC and SU
PUBLIC SERVICES AND RECREATION			
Impact 3.12-1: General Plan implementation could result in adverse physical impacts on the environment associated with governmental facilities and the provision of public services	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.12-2: General Plan implementation may result in adverse physical impacts associated with the deterioration of existing parks and recreation facilities or the	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
construction of new parks and recreation facilities			
Impact 3.12-3: General Plan implementation may increase demand for schools and result in the need to construct new schools	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
TRANSPORTATION AND CIRCULATION			
Impact 3.13-1: Implementation of the proposed General Plan would result in acceptable traffic operation at the study intersections controlled by the City of Brentwood	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.13-2: Implementation of the proposed General Plan would result in acceptable traffic operation on facilities designated by CCTA to be Routes of Regional Significance	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.13-3: The proposed General Plan would result in no changes to air traffic patterns	LS	*None Required*	LS
Impact 3.13-4: Implementation of the proposed General Plan would not substantially increase hazards due to a design feature	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.13-5: General Plan implementation would not result in impacts related to emergency access	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS

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Impact 3.13-6: The proposed General Plan would accommodate increased demand for public transit and supports a shift in trips from automobile to transit modes	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.13-7: The proposed General Plan is consistent with adopted bicycle and pedestrian plans, and supports enhancements that emphasize bicycle and pedestrian circulation	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
UTILITIES			
Impact 3.14-1: General Plan implementation would result in an increased demand for water supplies	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.14-2: General Plan implementation may require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.14-3: General Plan implementation has the potential to exceed wastewater treatment capacity or the requirements of the RWQCB	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.14-4: General Plan implementation may require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS

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ENVIRONMENTAL IMPACT	*LEVEL OF SIGNIFICANCE WITHOUT MITIGATION*	*MITIGATION MEASURE*	*RESULTING LEVEL OF SIGNIFICANCE*
environmental effects			
Impact 3.14-5: Implementation of the General Plan may result in new or expanded stormwater drainage facilities	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
Impact 3.14-6: The project would be served by a landfill for solid waste disposal needs and will require compliance with various laws and regulations	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LS
OTHER CEQA-REQUIRED TOPICS			
Impact 4.1: Cumulative Degradation of the Existing Visual Character of the Region	PS	*Mitigated to the greatest extent feasible through General Plan Policies and Actions. No additional feasible mitigation is available.*	CC and SU
Impact 4.2: Cumulative Impact to Agricultural Lands and Resources	PS	*Mitigated to the greatest extent feasible through General Plan Policies and Actions. No additional feasible mitigation is available.*	CC and SU
Impact 4.3: Cumulative Impact on the Region's Air Quality	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LCC
Impact 4.4: Cumulative Loss of Biological Resources Including Habitats and Special Status Species	PS	*Mitigated to the greatest extent feasible through General Plan Policies and Actions. No additional feasible mitigation is available.*	CC and SU
Impact 4.5: Cumulative Impacts on Known and Undiscovered Cultural Resources	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LCC
Impact 4.6: Cumulative Impacts related to Geology and Soils	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LCC

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Impact 4.7: Increased Greenhouse Gas Emissions May Contribute to Climate Change	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LCC
Impact 4.8: Cumulative impacts from hazardous materials and human health risks	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LCC
Impact 4.9: Cumulative impacts to Hydrology and Water Quality	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LCC
Impact 4.10: Cumulative Impact on Communities and Local Land Uses	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LCC
Impact 4.11: Cumulative Exposure of Noise-Sensitive Land Uses to Noise in Excess of Normally Acceptable Noise Levels or to Substantial Increases in Noise	PS	*Mitigated to the greatest extent feasible through General Plan Policies and Actions. No additional feasible mitigation is available.*	CC and SU
Impact 4.12: Cumulative Impact on Public Services and Recreation	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LCC
Impact 4.13: Cumulative Impact on the Transportation Network	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LCC
Impact 4.14: Cumulative Impact on Utilities	PS	*General Plan Policies and Actions mitigate this impact to a less than significant level.*	LCC
Impact 4.15: Irreversible Effects	PS	*Mitigated to the greatest extent feasible through General Plan Policies and Actions. No additional feasible mitigation is available.*	SU

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1.1 INTRODUCTION

In late 2012, Brentwood began a multi-year process to update the City's General Plan. State law requires every city and county in California to prepare and maintain a planning document called a general plan. A general plan is a "constitution" or "blueprint" for the future physical development of a county or city. As part of the Brentwood General Plan Update process, a General Plan Existing Conditions Report was prepared to establish a baseline of existing conditions in the city. Additionally, an Opportunities and Constraints Report and a Land Use Alternatives Report were prepared to identify the challenges facing the community, to provide an opportunity for citizens and policymakers to come together in a process of developing a common vision for the future, and to identify a range of options available to the City as the General Plan Land Use Map was modified and updated.

The updated Brentwood General Plan includes a framework of goals, policies, and actions that will guide the community toward its common vision. The General Plan is supported with a variety of maps, including a Land Use Map and Circulation Diagram.

BRENTWOOD GENERAL PLAN UPDATE

General Plan

The 2014 Brentwood General Plan (General Plan, General Plan Update, or proposed project) is the overarching policy document that guides land use, housing, transportation, infrastructure, community services, and other policy decisions throughout Brentwood. The General Plan includes the seven elements mandated by State law, to the extent that they are relevant locally, including: Circulation, Conservation, Housing, Land Use, Noise, Open Space, and Safety. The City may also address other topics of interest; this General Plan includes elements related to Community Services and Facilities, Economic Development, Fiscal Sustainability, Growth Management, and Infrastructure. The General Plan sets out the goals, policies, and actions in each of these areas, serves as a policy guide for how the City will make key planning decisions in the future, and guides how the City will interact with Contra Costa County, surrounding cities, and other local, regional, State, and Federal agencies.

The General Plan contains the goals and policies that will guide future decisions within the city. It also identifies implementation programs, in the form of actions, that will ensure the goals and policies in the General Plan are carried out. As part of the Brentwood General Plan Update, the City and the consultant team prepared several support documents that serve as the building blocks for the Policy Document and analyze the environmental impacts associated with implementing the General Plan.

The following paragraphs summarize the key component documents that are the building blocks of the Brentwood General Plan.

Existing Conditions Report

The Existing Conditions Report takes a "snapshot" of Brentwood's current (2012-2013) trends and conditions. It provides a detailed description of a wide range of topics within the city, such as demographic and economic conditions, land use, public facilities, and environmental resources. The Existing Conditions Report provides decision-makers, the public, and local agencies with context for making policy decisions. The Existing Conditions Report also serves as the environmental setting and description contained within this Draft EIR.

Opportunities and Constraints Report

Based on public input from community visioning workshops, information contained in the Existing Conditions Report, stakeholder interviews, and direction from City staff, the Opportunities and Constraints Report identifies key issues and opportunities to be addressed in the General Plan and summarizes input provided by participants of the visioning workshops. The Opportunities and Constraints Report provided the General Plan Update Working Group, the Planning Commission, and the City Council with tools and information for the development of the General Plan Policy Document and associated Land Use Map and Circulation Diagram.

Land Use Alternatives Report

The Land Use Alternatives Report presents three different Land Use Map alternatives. An analysis of the land use, circulation, fiscal sustainability, economic development, and public services and infrastructure effects relative to each alternative is provided. The report is accompanied by a detailed fiscal analysis that addresses long-range fiscal impacts in terms of the cost to provide services to projected land uses and growth versus the revenues generated under each alternative.

Environmental Impact Report

An EIR responds to the requirements of the California Environmental Quality Act (CEQA) as set forth in Sections 15126, 15175, and 15176 of the CEQA Guidelines. The Planning Commission and City Council will use the EIR during the General Plan Update process in order to understand the potential environmental implications associated with implementing the General Plan. This EIR was prepared concurrently with the General Plan policy document in order to facilitate the development of a General Plan that is largely self-mitigating. In other words, as environmental impacts associated with the new General Plan, including the Land Use Map, were identified; policies and actions were incorporated into the General Plan policy document in order to reduce or avoid potential environmental impacts.

1.2 PURPOSE OF THE EIR

The City of Brentwood, as lead agency, determined that the Brentwood General Plan Update is a "project" within the definition of the California Environmental Quality Act (CEQA). CEQA requires the preparation of an environmental impact report (EIR) prior to approving any project that may have a significant impact on the environment. For the purposes of CEQA, the term "project" refers to the whole of an action, which has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378[a]).

This Draft EIR has been prepared according to CEQA requirements to evaluate the potential environmental impacts associated with the implementation of the Brentwood General Plan. A copy of the Public Draft General Plan is located on the Brentwood General Plan Update website, at www.brentwood.generalplan.org. The Draft EIR also discusses alternatives to the General Plan, and proposes mitigation measures that will offset, minimize, or otherwise avoid significant environmental impacts. This Draft EIR has been prepared in accordance with CEQA, California Resources Code Section 21000 et seq.; the Guidelines for the California Environmental Quality Act (California Code of Regulations, Title 14, Chapter 3); and the rules, regulations, and procedures for implementing CEQA as adopted by the City of Brentwood.

An EIR must disclose the expected direct and indirect environmental impacts associated with a project, including impacts that cannot be avoided, growth-inducing effects, impacts found not to be significant, and significant cumulative impacts, as well as identify mitigation measures and alternatives to the proposed project that could reduce or avoid its adverse environmental impacts. CEQA requires government agencies to consider and, where feasible, minimize environmental impacts of proposed development, and an obligation to balance a variety of public objectives, including economic, environmental, and social factors.

1.3 TYPE OF EIR

The State CEQA Guidelines identify several types of EIRs, each applicable to different project circumstances. This EIR has been prepared as a Program EIR pursuant to CEQA Guidelines Section 15168. Section 15168 states:

"A program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either:

1) Geographically;
2) As logical parts in the chain of contemplated actions;
3) In connection with issuance of rules, regulations, plans or other general criteria to govern the conduct of a continuing program; or
4) As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways."

The program-level analysis considers the broad environmental effects of the proposed project. This EIR will be used to evaluate subsequent projects and activities under the proposed project. This EIR is intended to provide the information and environmental analysis necessary to assist public agency decision-makers in considering approval of the proposed project, but not to the level of detail to consider approval of subsequent development projects that may occur after adoption of the General Plan.

Additional environmental review under CEQA may be required for subsequent projects and would be generally based on the subsequent project's consistency with the General Plan and the analysis in this EIR, as required under CEQA. It may be determined that some future projects or

infrastructure improvements may be exempt from environmental review. When individual subsequent projects or activities under the General Plan are proposed, the lead agency that would approve and/or implement the individual project will examine the projects or activities to determine whether their effects were adequately analyzed in this program EIR (CEQA Guidelines Section 15168). If the projects or activities would have no effects beyond those disclosed in this EIR, no further CEQA compliance would be required.

1.4 INTENDED USES OF THE EIR

The City of Brentwood, as the lead agency, has prepared this EIR to provide the public and responsible and trustee agencies with an objective analysis of the potential environmental impacts resulting from adoption of the Brentwood General Plan and subsequent implementation of projects consistent with the General Plan. The environmental review process enables interested parties to evaluate the proposed project in terms of its environmental consequences, to examine and recommend methods to eliminate or reduce potential adverse impacts, and to consider a reasonable range of alternatives to the project. While CEQA requires that consideration be given to avoiding adverse environmental effects, the lead agency must balance adverse environmental effects against other public objectives, including the economic and social benefits of a project, in determining whether a project should be approved.

This EIR will be used as the primary environmental document to evaluate all subsequent planning and permitting actions associated with the General Plan. Subsequent actions that may be associated with the General Plan are identified in Chapter 2.0, Project Description. This EIR may also be used by other agencies within Contra Costa County, including the Contra Costa Local Agency Formation Commission (LAFCO), which may use this EIR during the preparation of environmental documents related to Municipal Service Reviews and Spheres of Influence relevant to Brentwood.

1.5 KNOWN RESPONSIBLE AND TRUSTEE AGENCIES

The term "Responsible Agency" includes all public agencies other than the Lead Agency that have discretionary approval power over the project or an aspect of the project (CEQA Guidelines Section 15381). For the purpose of CEQA, a "Trustee" agency has jurisdiction by law over natural resources that are held in trust for the people of the State of California (CEQA Guidelines Section 15386). While no Responsible Agencies or Trustee Agencies are responsible for approvals associated with adoption of the Brentwood General Plan, implementation of future projects within Brentwood may require permits and approvals from such agencies, which may include the following:

- California Department of Fish and Wildlife (CDFW)
- California Department of Transportation (Caltrans)
- Regional (Central Valley) Water Quality Control Board (RWQCB)
- U.S. Army Corps of Engineers (ACOE)
- U.S. Fish and Wildlife Service (USFWS)
- Contra Costa Local Agency Formation Commission (LAFCO)
- Bay Area Air Quality Management District (BAAQMD)

1.6 ENVIRONMENTAL REVIEW PROCESS

The review and certification process for the EIR has involved, or will involve, the following general procedural steps:

NOTICE OF PREPARATION

The City of Brentwood circulated a Notice of Preparation (NOP) of an EIR for the proposed project on February 26, 2014 to trustee and responsible agencies, the State Clearinghouse, and the public. A scoping meeting was held on March 18, 2014 with the Brentwood Planning Commission. No public or agency comments on the NOP related to the EIR analysis were presented or submitted during the scoping meeting. However, during the 30-day public review period for the NOP, which ended on March 28, 2014, six written comment letters were received on the NOP. A summary of the NOP comments is provided later in this chapter. The NOP and all comments received on the NOP are presented in Appendix A.

DRAFT EIR

This document constitutes the Draft EIR. The Draft EIR contains a description of the project, description of the environmental setting, identification of the project's direct and indirect impacts on the environment and mitigation measures for impacts found to be significant, as well as an analysis of project alternatives, identification of significant irreversible environmental changes, growth-inducing impacts, and cumulative impacts. This Draft EIR identifies issues determined to have no impact or a less than significant impact, and provides detailed analysis of potentially significant and significant impacts. Comments received in response to the NOP were considered in preparing the analysis in this EIR. Upon completion of the Draft EIR, the City of Brentwood will file the Notice of Completion (NOC) with the State Clearinghouse of the Governor's Office of Planning and Research to begin the public review period.

PUBLIC NOTICE/PUBLIC REVIEW

Concurrent with the NOC, the City of Brentwood will provide a public notice of availability for the Draft EIR, and invite comment from the general public, agencies, organizations, and other interested parties. Consistent with CEQA requirements, the review period for this Draft EIR is forty-five (45) days. Public comment on the Draft EIR will be accepted in written form. All comments or questions regarding the Draft EIR should be addressed to:

Erik Nolthenius, Planning Manager
City of Brentwood Community Development Department
150 City Park Way
Brentwood, CA 94513
enolthenius@brentwoodca.gov

RESPONSE TO COMMENTS/FINAL EIR

Following the public review period, a Final EIR will be prepared. The Final EIR will respond to both oral and written comments received during the public review period.

CERTIFICATION OF THE EIR/PROJECT CONSIDERATION

The City of Brentwood will review and consider the Final EIR. If the City finds that the Final EIR is "adequate and complete," the City Council may certify the Final EIR in accordance with CEQA. As set forth by CEQA Guidelines Section 15151, the standards of adequacy require an EIR to provide a sufficient degree of analysis to allow decisions to be made regarding the proposed project that intelligently take account of environmental consequences.

Upon review and consideration of the Final EIR, the City Council may take action to approve, revise, or deny the project. A decision to approve the proposed project, for which this EIR identifies significant environmental effects, must be accompanied by written findings in accordance with State CEQA Guidelines Sections 15091 and 15093. A Mitigation Monitoring and Reporting Program (MMRP) would also be adopted in accordance with Public Resources Code Section 21081.6(a) and CEQA Guidelines Section 15097 for mitigation measures that have been incorporated into or imposed upon the project to reduce or avoid significant effects on the environment. The MMRP will be designed to ensure that these measures are carried out during project implementation, in a manner that is consistent with the EIR.

1.7 ORGANIZATION AND SCOPE

Sections 15122 through 15132 of the State CEQA Guidelines identify the content requirements for Draft and Final EIRs. An EIR must include a description of the environmental setting, an environmental impact analysis, mitigation measures, alternatives, significant irreversible environmental changes, growth-inducing impacts, and cumulative impacts. Discussion of the environmental issues addressed in the Draft EIR was established through review of environmental and planning documentation developed for the project, environmental and planning documentation prepared for recent projects located within the city of Brentwood, and responses to the Notice of Preparation (NOP).

This Draft EIR is organized in the following manner:

EXECUTIVE SUMMARY

The Executive Summary summarizes the characteristics of the proposed project, known areas of controversy and issues to be resolved, and provides a concise summary matrix of the project's environmental impacts and possible mitigation measures. This chapter identifies alternatives that reduce or avoid at least one significant environmental effect of the proposed project.

CHAPTER 1.0 – INTRODUCTION

Chapter 1.0 briefly describes the proposed project, the purpose of the environmental evaluation, identifies the lead, trustee, and responsible agencies, summarizes the process associated with

preparation and certification of an EIR, identifies the scope and organization of the Draft EIR, and summarizes comments received on the NOP.

CHAPTER 2.0 – PROJECT DESCRIPTION

Chapter 2.0 provides a detailed description of the proposed project, including the location, intended objectives, background information, the physical and technical characteristics, including the decisions subject to CEQA, subsequent projects and activities, and a list of related agency action requirements.

CHAPTER 3.0 - ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

Chapter 3.0 contains an analysis of environmental topic areas as identified below. Each subchapter addressing a topical area is organized as follows:

Environmental Setting. A description of the existing environment as it pertains to the topical area.

Regulatory Setting. A description of the regulatory environment that may be applicable to the project.

Impacts and Mitigation Measures. Identification of the thresholds of significance by which impacts are determined, a description of project-related impacts associated with the environmental topic, identification of appropriate mitigation measures, and a conclusion as to the significance of each impact.

The following environmental topics are addressed in this section:

- Aesthetics and Visual Resources
- Agricultural and Forest Resources
- Air Quality
- Biological and Natural Resources
- Cultural Resources
- Geology, Soils, and Minerals
- Greenhouse Gases and Climate Change
- Hazards
- Hydrology and Water Quality
- Land Use and Population
- Noise
- Public Services and Recreation
- Transportation and Circulation
- Utilities

CHAPTER 4.0 – OTHER CEQA-REQUIRED TOPICS

Chapter 4.0 evaluates and describes the following CEQA required topics: impacts considered less-than-significant, significant and irreversible impacts, growth-inducing effects, cumulative impacts, and significant and unavoidable environmental effects.

CHAPTER 5.0 - ALTERNATIVES

Chapter 5.0 provides a comparative analysis between the merits of the proposed project and the selected alternatives. State CEQA Guidelines Section 15126.6 requires that an EIR describe a range of reasonable alternatives to the project, which could feasibly attain the basic objectives of the project and avoid and/or lessen any significant environmental effects of the project.

CHAPTER 6.0 - REPORT PREPARERS

Chapter 6.0 lists all authors and agencies that assisted in the preparation of the Draft EIR, by name, title, and company or agency affiliation.

APPENDICES

This section includes all notices and other procedural documents pertinent to the Draft EIR, as well as technical material prepared to support the analysis.

1.8 COMMENTS RECEIVED ON THE NOTICE OF PREPARATION

The City received six comment letters on the NOP. Copies of these letters are provided in Appendix A of this Draft EIR and the comments are summarized below.

- City of Antioch: The City of Antioch requested that the EIR address traffic impacts to the regional transportation systems within Antioch, and that the Brentwood General Plan be amended with respect to SPA 2.
- Greenbelt Alliance: Greenbelt Alliance requested that the EIR address impacts related to development of SPAs 1 and 2, growth inducement, air pollution, greenhouse gases, and vehicle miles travelled.
- California Department of Transportation (Caltrans): Caltrans provided suggested information to include in the EIR traffic study and provided input with respect to content of the General Plan related to corridor operations, traffic fees, and vehicle trip reduction.
- West Coast Home Builders: West Coast Home Builders requested changes to the General Plan Land Use Map with respect to one of its subject properties (Bridle Gate).
- Contra Costa Local Agency Formation Commission (LAFCO): LAFCO provided input regarding future use of the EIR by LAFCO related to SOI amendments and annexations, and provided comments on policies contained in the Draft General Plan.
- Delta Protection Commission: The Delta Protection Commission noted that the city limits, SOI, and ULL do not fall within the Primary Zone of the Sacramento-San Joaquin Delta, and are therefore not subject to consistency requirements with the Land Use and Resource Management Plan for the Primary Zone of the Delta. The Commission requested an explanation of land use authority in the Planning Area.

2.1 BACKGROUND AND OVERVIEW

STATE GENERAL PLAN LAW

California Government Code Section 65300 et seq. requires all counties and cities to prepare and maintain a general plan for the long-term growth, development, and management of the land within the jurisdiction's planning boundaries. The general plan acts as a "constitution" for development, and is the jurisdiction's lead legal document in relation to growth, development, and resource management issues. Development regulations (e.g., zoning and subdivision standards) are required by law to be consistent with the general plan.

General plans must address a broad range of topics, including, at a minimum, the following mandatory elements: land use, circulation, housing, conservation, open space, noise, and safety. At the discretion of each jurisdiction, the general plan may combine these elements and may add optional elements relevant to the physical features of the jurisdiction.

The California Government Code also requires that a general plan be comprehensive, internally consistent, and plan for the long term. The general plan should be clearly written, easy to administer, and available to all those concerned with the community's development.

State planning and zoning law (California Government Code Section 65000 et seq.) establishes that zoning ordinances are required to be consistent with the general plan and any applicable specific plans, area plans, master plans, and other related planning documents. When amendments to the general plan are made, corresponding changes in the zoning ordinance may be required within a reasonable time to ensure consistency between the revised land use designations in the general plan (if any) and the permitted uses or development standards of the zoning ordinance (Gov. Code Section 65860, subd. [c]).

GENERAL PLAN UPDATE PROCESS

The City's General Plan was last comprehensively updated in 1993 (a partial update involving the Growth Management, Land Use, and Circulation Elements was completed in 2001) and an update to the Housing Element was completed in 2012. In the summer of 2012 the City issued a request for proposals (RFP) inviting bids from qualified consulting firms to assist the City in the preparation of a comprehensive update to the General Plan.

The process to update the Brentwood General Plan began in the fall of 2012 and is scheduled to be completed with the adoption of the updated Brentwood General Plan by the City Council in July 2014. The Brentwood General Plan (General Plan or proposed project) was developed with extensive community input and reflects the community's vision for Brentwood. A summary of the community outreach and public participation process is provided below.

Visioning Workshops

In November and December 2012, the General Plan Update team held four public visioning workshops to help kickoff the General Plan Update process. City residents and stakeholders attended workshops at the Brentwood Community Center and the Brentwood Senior Activity Center. The workshops provided an opportunity for the public to offer their thoughts on what they value about their community and the city, and what important issues should be addressed in updating the General Plan.

Each workshop included a presentation by the consultant team that explained the role of the General Plan, an overview of the General Plan Update process, and an opportunity for the workshop participants to ask questions and seek clarification on the process and the role of the community. Workshop participants were asked to complete activities and exercises in order to provide information to the General Plan Update team. Each workshop focused on different themes and topics to be addressed in the General Plan. A summary of the four visioning workshops is provided in Chapter 2.0 of the Opportunities and Constraints Report, which is available for review online at: www.brentwood.generalplan.org.

Online Surveys and Polls

City staff and the consultant team developed two online surveys to gather additional information from the public related to the General Plan Update. The online surveys were available through the General Plan Update website, and were developed to pose similar questions to those posed at the visioning workshops, and to gather additional details regarding City service levels, residential homeownership, employment locations, and economic development priorities. The first survey included 25 specific questions, and was completed or partially completed by approximately 50 people. The second survey requested information regarding the community's vision, assets, and challenges, and was completed by approximately 20 people. Detailed survey results and responses are contained in Appendix B of the Opportunities and Constraints Report.

General Plan Update Working Group

The 12-member General Plan Update Working Group, which consisted of members from the City Council, Planning Commission, Parks and Recreation Commission, and the community at-large, collaborated with City staff and the General Plan Update consultant team throughout the development of the General Plan. The Working Group met approximately 15 times between March 2013 and February 2014, to identify key issues and challenges that Brentwood faces over the next 20-30 years, and to develop the comprehensive set of goals, policies, and actions contained in the General Plan. Each Working Group meeting was open to the public, and numerous members of the public and other local interested agencies attended the meetings and provided detailed input to the Working Group.

City Council and Planning Commission Workshops

The City Council and Planning Commission held approximately 10 public workshops and hearings to review and consider the goals and policies of the existing General Plan, review input from the Visioning Workshops, receive information relevant to the specific topics addressed at the Working Group meetings, and provide specific direction and guidance to staff and the consultant team regarding how goals should be achieved and how to address current issues in the General Plan Update.

Public Outreach

For all public workshops and meetings, the Brentwood Community Development Department conducted extensive outreach, using a wide variety of methods and tools, to inform and encourage the community to participate in the General Plan Update process. The following is a list of methods and tools used to inform the public of meetings, workshops, and the status of the General Plan Update work efforts.

- General Plan Website: The City maintains a website (www.brentwood.generalplan.org) devoted to informing the public about, and encouraging participation in, the General Plan Update process. The website includes all public notices, all workshop materials, presentations given to the Working Group, Planning Commission, and City Council, background materials, draft policy documents, and draft versions of the General Plan Land Use Map.

- General Plan Newsletters: Periodic newsletters were prepared and disseminated to the public via e-mail, the General Plan website, and posted in locations throughout the city. The newsletters provide information regarding the status of the work efforts, upcoming meetings and workshops, and opportunities for public participation.

- Local Newspapers: Public notices, meeting notices, press releases, and public service announcements were published in the local newspaper prior to each public meeting or workshop.

- E-mail distribution list: This list was developed and maintained over time, and included approximately 300 agencies, organizations, stakeholders, and individuals.

- Regular City publications: These publications included the weekly City Manager Update, the monthly Brentwood Business eNewsletter, and the quarterly Brentwood Connection.

2.2 PROJECT LOCATION

REGIONAL SETTING

Brentwood is located in eastern Contra Costa County on the eastern perimeter of the San Francisco Bay Area metropolitan area. Immediately beyond Brentwood to the south and east are rich farmlands and the famous Delta waterways. The city's location is approximately equidistant (50 miles) from San Francisco to the southwest and Sacramento to the northeast (see Figure 2.0-

1). The Brentwood General Plan covers a 42 square mile Planning Area that includes the city of Brentwood and nearby lands in Contra Costa County. The County's General Plan and zoning designations regulate the land that is within Brentwood's Planning Area but outside of the city limits. However, State law requires the City to plan for areas outside of its immediate jurisdiction, if the areas have a direct relationship to its planning needs.

The City of Brentwood, incorporated in 1948, was among the fastest growing cities in California during the early and mid-2000's, and encompasses 14.8 square miles in eastern Contra Costa County on the rim of the San Francisco Bay Area. The city has a strong agricultural heritage, but has become more urbanized with the rapid population growth of the last several years. Brentwood is primarily a residential community due to its historically affordable housing supply, and has an estimated population of 53,278 as of January 1, 2013. Concurrent with the housing boom of the early and mid-2000's, the city experienced a substantial increase in retail and service uses, as well as moderate growth in the light industrial sector. Despite these increases, the city is still a popular community for commuters. Additionally, the Contra Costa County agricultural core is situated to the south and east of the community, and supports an agri-tourism industry, which has long been popular with residents from across the region.

STUDY AREA

There are four key boundary lines addressed by the General Plan, which make up the study area for the General Plan EIR. These include the city limits, the Sphere of Influence (SOI), the Urban Limit Line (ULL), and the Planning Area, as shown on Figure 2.0-2 and described below.

City Limits: Includes the area within the City's corporate boundary, over which the City exercises land use authority and provides public services.

Sphere of Influence (SOI): The probable physical boundary and service area of the City, as adopted by the Local Agency Formation Commission (LAFCO). The SOI includes both incorporated and unincorporated areas within which Brentwood will have the primary responsibility for the provision of public facilities and services. Lands within the SOI but outside existing city limits may be considered for development after annexation. Until that time, the area within the SOI is under the jurisdiction of Contra Costa County and its General Plan; however, City policies will influence the County's considerations of development proposals for lands within the SOI.

Urban Limit Line (ULL): A countywide growth management tool used to ensure that each jurisdiction in the county regulates the geographic extent of urban growth and has a plan for future transportation improvements and urban services. The establishment of an urban limit line is a requirement of Measure J, which took effect on April 1, 2009. Compliance with Measure J is necessary for local jurisdictions to continue receiving their share of Local Transportation Maintenance and Improvement funds generated by the Measure J transportation sales tax, and to be eligible for Contra Costa Transportation for Livable Communities funds. All jurisdictions in the county (including Brentwood) had the option of either adopting the Measure L County voter-approved urban limit line or their

own local voter-approved urban limit line. In January 2008, the Brentwood City Council adopted a resolution adopting the Measure L County voter-approved urban limit line.

Planning Area: For the purposes of the General Plan, the Planning Area is defined as the area surrounding the city limits and SOI that is included in the analysis and planning for the 20-year horizon of the General Plan.

2.3 DESCRIPTION OF PROPOSED GENERAL PLAN PROJECT

The City of Brentwood is preparing a comprehensive update to its existing General Plan, which was last comprehensively updated in 1993 (a partial update involving the Growth Management, Land Use, and Circulation Elements was completed in 2001). The General Plan Update is expected to be complete in the summer of 2014.

The overall purpose of the Brentwood General Plan is to create a policy framework that articulates a vision for the city's long-term physical form and development, while preserving and enhancing the quality of life for Brentwood residents, and increasing opportunities for high-quality local job growth. The key components of the General Plan will include broad goals for the future of Brentwood, and specific policies and actions that will help implement the stated goals.

GENERAL PLAN ELEMENTS

The Brentwood General Plan will include a comprehensive set of goals, policies, and actions (implementation measures), as well as a revised Land Use Map (Figure 2.0-3). The State requires that the General Plan contain seven mandatory elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. The Brentwood General Plan will include all of the State-mandated elements, as well as several optional elements, including: Community Services and Facilities, Economic Development, Fiscal Sustainability, Growth Management, and Infrastructure.

- The **Circulation Element** correlates closely with the Land Use Element, and identifies the general locations and extent of existing and proposed major thoroughfares, transportation routes, and alternative transportation facilities necessary to support a multi-modal transportation system. This element is intended to facilitate mobility of people and goods throughout Brentwood by a variety of transportation modes, including bicycle, pedestrian, and transit.

- The **Community Services and Facilities Element** includes goals, policies, and actions that address public services and facilities, including: parks, trails, and recreation facilities; police services; fire protection services; schools; and civic, library, medical, and other community facilities. While not specifically required by State law for inclusion in the General Plan, the Community Services and Facilities Element is a critical component in meeting the infrastructure and public services needs of businesses and residents.

- The **Conservation and Open Space Element** addresses the conservation, development, and use of natural resources, riparian environments, native plant and animal species, soils, mineral deposits, cultural/historical resources, air quality, and alternative energy. It also

details plans and measures for preserving open space for natural resources and the managed production of resources.

- The **Economic Development Element** seeks to sustain and diversify the city's economy, recognizing the importance of supporting existing and local businesses while broadening and expanding the employment base and economic opportunities within the city. Long-term fiscal sustainability will be supported by economic growth from increasing the range of business, commercial services, and high-quality jobs in the city. Providing a broader economic base is intended to improve the city's economic vitality while increasing access for residents to local goods and services and local employment opportunities.

- The **Fiscal Sustainability Element** presents goals, policies, and actions relating to the City's long-term financial health and prosperity. The ability of the City to provide services such as police protection, parks, recreation, code enforcement, planning, and public works is dependent on the City collecting adequate revenues. Brentwood's economic development and fiscal vitality are inter-dependent. A vital local economy ensures that private investment is taking place in the community while generating needed tax revenues to support public services and facilities. When local government is adequately financed, it can in turn provide the infrastructure, planning, and services essential for maintaining a high quality of life and environment where businesses can prosper.

- The **Growth Management Element** is part of the General Plan because the City wants to ensure orderly and fiscally sustainable growth, while maintaining high levels of public services and infrastructure, and because Contra Costa County voters approved a 0.5% sales tax increase in November 1988, commonly known as "Measure C," that includes both Transportation Improvement and Growth Management Programs (GMP). Growth management systems promote a variety of environmental, social, and economic goals, including balancing the service costs and revenues associated with development; protecting environmental and aesthetic qualities; encouraging the efficient use of land, water, and energy resources; preserving community identity; and protecting the economic base of the community.

- The **Infrastructure Element** includes goals, policies, and actions that address the following infrastructure services and facilities: water supplies, sewer services, storm drainage infrastructure, and solid waste disposal. While not specifically required by State law for inclusion in the General Plan, the Infrastructure Element is a critical component in meeting the infrastructure and utility services needs of businesses and residents.

- The **Land Use Element** designates the general distribution and intensity of residential, commercial, industrial, open space, public/semi-public, and other categories of public and private land uses. The Land Use Element includes the Land Use Map, which identifies land use designations for each parcel in the city limits and Planning Area (Figure 2.0-3).

- The **Noise Element** establishes standards and policies to protect the community from the harmful and annoying effects of exposure to excessive noise levels. This element includes

strategies to reduce land use conflicts that may result in exposure to unacceptable noise levels.

- The **Safety Element** establishes policies and programs to protect the community from risk associated with geologic, flood, and fire hazards, as well as setting standards for emergency preparedness.

Goals, Policies, and Actions

Each element of the Brentwood General Plan contains a series of goals, policies, and actions. The goals, policies, and actions provide guidance to the City on how to direct change, manage growth, and manage resources over the 20-year life of the General Plan. The following provides a description of each and explains the relationship of each:

- A **goal** is a description of the general desired result that the City seeks to create through the implementation of the General Plan.

- A **policy** is a specific statement that guides decision-making as the City works to achieve its goals. Once adopted, policies represent statements of City regulations. The General Plan's policies set out the standards that will be used by City staff, the Planning Commission, and the City Council in their review of land development projects, resource protection activities, infrastructure improvements, and other City actions. Policies are on-going and require no specific action on behalf of the City.

- An **action** is an implementation measure, procedure, technique, or specific program to be undertaken by the City to help achieve a specified goal or implement an adopted policy. The City must take additional steps to implement each action in the General Plan. An action is something that can and will be completed.

General Plan Land Use Map

The General Plan Land Use Map identifies land use designations for each parcel within the city of Brentwood and the City's Planning Area. The Brentwood General Plan Land Use Map is attached as Figure 2.0-3.

General Plan Land Use Designations

The Land Use Element of the Brentwood General Plan defines various land use designations by their allowable uses, minimum parcel sizes, and maximum development densities. The following describes the proposed land use designations for the General Plan. Table 2.0-1 shows the total acreage for each land use designation shown on the proposed Land Use Map.

RESIDENTIAL LAND USE DESIGNATIONS

Ranchette Estate (RE) – The RE designation is intended to maintain and/or provide for large residential lots of one acre or more in size, where residents want the proximity and amenities of urban life and yet are able to enjoy some of the benefits of a more rural environment. This designation is intended to maintain some of the small town flavor

and/or agricultural character of Brentwood's past. The maximum density for this designation is 1.0 unit per gross acre.

Residential Very Low Density (R-VLD) - The R-VLD designation provides for fairly large lots for single family residences in an identifiable, suburban residential neighborhood, or cluster-style development designed with open space and other amenities. Neighborhoods with either development type will be part of the Brentwood urban area and be provided with urban public facilities and services. The permitted density range is 1.1 to 3.0 units per gross acre, with a mid-range of 2.0 units per gross acre.

Residential Low Density (R-LD) - The R-LD designation is designed predominantly for single-family detached houses, although higher density developments could be accommodated if offset with sufficient open space or other amenities in order to maintain the gross density within the indicated range. The permitted density range is 1.1 to 5.0 units per gross acre, with a mid-range of 3.0 units per gross acre.

Residential Medium Density (R-MD) – The R-MD designation accommodates a variety of housing product types, including duplexes, triplexes, apartments, townhouses, and small lot single-family detached. The permitted density range is 5.1 to 11.0 units per gross acre, with a mid-range of 8.0 units per gross acre.

Residential High Density (R-HD) – The R-HD designation provides for multi-family development in structures of two to three stories, with off-street parking and other requirements for higher density living. The level of amenities, the project location, and the unit types will affect the actual density achieved. The permitted density range is 11.1 to 20.0 units per gross acre, with a mid-range of 15.5 units per gross acre.

Residential Very High Density (R-VHD) – The R-VHD designation provides for multi-family development and is primarily intended for apartments and/or condominiums in mixed-use areas or areas that are in close proximity to services and facilities that serve very high density uses. This designation accommodates structures of two to three stories or greater, with off-street parking and other requirements suitable for pedestrian-oriented, work-live, and/or mixed-use neighborhoods. The level of amenities, the project location, and the unit types will affect the actual density achieved. The permitted density range is 20.1 to 30.0 units per gross acre (there is no applicable mid-range density for this designation).

COMMERCIAL, OFFICE, MIXED-USE, AND INDUSTRIAL LAND USE DESIGNATIONS

Regional Commercial (RC) – The RC designation includes large-scale retail stores and service uses to serve the general needs of the community and the region, primarily along the State Route 4 corridor on large development sites. This designation is intended for businesses that serve the needs of Brentwood residents as well as neighboring communities. Mixed uses allow for the development of large offices as a secondary use. Examples of uses include bulk retailers, large department stores, supermarkets, hardware stores, and offices.

General Commercial (GC) – The GC designation allows for concentrations of a variety of mixed commercial uses and service type businesses to serve specific areas of the city and neighborhoods that are related to State Route 4 and some arterial intersections, on parcels generally ranging from one to 20 acres. Such uses do not lend themselves to being located in regional commercial centers, but are encouraged in orderly clusters in suitable locations proximate to State Route 4 and adjacent to major arterials. Depending upon the size of the development, a single major tenant (e.g. supermarket or small department store) or a single small tenant (e.g. convenience store) should provide the anchor. As a secondary use, independent small businesses (e.g. hair salons, shoe repair, offices, and restaurants) are also allowed.

Business Park (BP) – The BP designation provides for integrated business and research parks, large individual corporate establishments, professional and administrative office centers, and light industrial complexes. Selected complementary commercial activities and limited residential uses may also be allowed. Examples of allowed uses in this designation include medical supply companies, research laboratories, printing companies, warehousing, auto services, equipment repair, wholesale home furnishings, light manufacturing, retail commercial services, restaurants, and wineries (including associated orchards, row crops, production facilities, packing and shipping facilities, amphitheater and related uses, and catering facilities). Multi-family housing units, senior apartments and living facilities, and institutional levels of congregate care are allowed at a density of 20.1 to 30.0 units per acre, where adjacent to existing or planned residential development and provided that they do not exceed 20% of any contiguous Business Park designation.

Mixed Use Pedestrian Transit (MUPT) – The MUPT designation identifies an area which, because of its strategic location, access, and visibility to SR 4, shall be developed predominately with jobs-generating and commercial uses. This designation is intended to provide high-quality jobs in office, professional, research and technology, and light industry sectors, and to allow commercial uses with a regional focus. This area is envisioned to be served by mass transit (i.e., eBART) or located at or near a destination point with a regular bus route. Other uses may include integrated medium to very high density residential development and amenities, including services, restaurants, and recreation opportunities, in a pedestrian-friendly environment. Multi-family housing units will be allowed at a density of 5.1 to 30.0 units per acre, in accordance with the policy direction provided by Priority Area 1 (there is no applicable mid-range density for this designation).

Professional Office (PO) – The PO designation is predominantly intended for development with a professional, institutional, or medical-dental orientation. The designation is not meant for office space that is ancillary to a major industrial operation. Typical uses in this designation might include medical, legal, and real estate offices.

Industrial (I) – The I designation provides for industrial uses that tend to have some adverse impacts on the environment, including generating truck traffic, noise, odors, or

smoke. Examples of allowed uses include concrete batch plants, trucking operations, and power generators.

SPECIFIC PLAN AND PLANNED DEVELOPMENT LAND USE DESIGNATIONS

Downtown Specific Plan (DSP) – The DSP designation provides for the current and future uses of the Downtown area of Brentwood, in accordance with the Downtown Specific Plan. Its purpose is to create a pedestrian-oriented, economically-viable town center. A variety of uses are allowed in this designation, including entertainment, retail, commercial, residential, civic, cultural, and transit in a compact, walkable, and unique setting that only the Downtown can offer. All new development occurring within the DSP designations is required to adhere to the development standards and guidelines established in the Downtown Specific Plan.

Brentwood Boulevard Specific Plan (BBSP) – The BBSP designation provides for the current and future uses along the Brentwood Boulevard corridor, in accordance with the Brentwood Boulevard Specific Plan. The BBSP designation accommodates a range of residential, commercial, office, mixed use, and other complementary uses that encourage the revitalization of the Brentwood Boulevard corridor within the Brentwood Boulevard Specific Plan area.

Planned Development (PD) – The PD designation identifies areas where a master planned project has been approved and entitled, but the entitled projects do not clearly conform to an existing land use designation.

PUBLIC, SEMI-PUBLIC, AND CONSERVATION LAND USE DESIGNATIONS

Public Facility (PF) - The PF designation applies to land areas reserved for government offices and facilities, public agency offices and facilities, and public utility facilities.

Semi-Public Facility (SPF) - The SPF designation applies to land areas reserved for privately owned uses that serve the community. These uses include religious assembly facilities, golf courses and other privately owned recreation facilities, private schools, and day care centers.

Park (P) – The P designation includes existing and future park and recreation facilities of varying size, function, and location to serve the entire community. Standards for park sites are described in greater detail in the Community Services and Facilities Element. The Land Use Map does not reflect all potential future park sites. Parks are an allowed land use in all residential, commercial, business park, mixed-use, and public and semi-public facility designations.

School (SCH) – The SCH designation identifies the locations of existing and planned public schools, as well as administrative offices and other facilities that are owned and operated by the respective school district. The Land Use Map does not reflect all potential future school sites.

Community College (CC) – The CC designation identifies the location of a future community college.

Permanent Open Space (P-OS) – The P-OS designation identifies lands that are permanently protected from future urban development through the application of conservation easements or other formal mechanisms to ensure that open space uses are continued in perpetuity. Appropriate and typical uses include grazing land, regional and State parks, wildlife preserves, and habitat areas.

Agricultural Conservation (AC) – The AC designation encompasses lands with continuing commercial agricultural potential. The intent of this designation is to retain primary agricultural use to the greatest extent possible. This is done by focusing public and private efforts to protect such land from the impacts and pressures of the nearby urban area as well as to enhance the income potential from agricultural use. In order to protect the Urban Limit Line, no annexations or urban-type development will be allowed in this area. Examples of allowed uses include orchards, row crops, nurseries, grazing lands, open space, packing and shipping facilities, wineries, bed and breakfast inns, u-pick stands, farm equipment repair and services, and parks.

Urban Reserve (UR) – The UR designation serves as a placeholder for future urban development. The land designated as Urban Reserve is located beyond the existing Sphere of Influence (SOI) and outside the Urban Limit Line. Lands designated Urban Reserve shall not be extensively subdivided or developed until it is appropriate to develop the lands with urban levels of residential, commercial, parks and recreation, and public/semi-public uses. It is expected that more specific planning and feasibility studies will be required prior to the development of these areas. Development of these areas will require separate environmental review, General Plan amendments, Sphere of Influence amendments, annexations, and other entitlements. In order to avoid "leapfrog" style development, provide for the logical extension of City services, and allow for appropriate planning of Brentwood, the Urban Reserve areas could only develop when each of the following occurs:

1. Urban development is occurring immediately adjacent to the Urban Reserve parcel which intends to develop.

2. Urban services (i.e., water, wastewater, storm drainage, utilities, and roads) have been extended or are planned to be extended to the majority of adjacent lands designated for urban uses.

3. The new development improves the jobs/housing balance or maintains an approximately 1.5:1 jobs/housing balance, or there is substantial justification why this ratio cannot be met. The City may determine that the above findings are not required if the development offers substantial amenities or benefits to the community that are beyond current levels. Prior to the submittal of an application for any entitlements within the Urban Reserve area, a market feasibility study shall be prepared by an independent consultant contracted by the City and paid for by

the developer. The results of this study shall be used by the City Council to determine if it is appropriate for the property to develop.

SPECIAL PLANNING AREAS AND PRIORITY AREAS

Special Planning Area (SPA) - Two Special Planning Areas are designated by the General Plan. These areas have been designated as Special Planning Areas for one or more of the following reasons:

1. To facilitate comprehensive planning of large strategic areas utilizing progressive planning techniques to ensure high quality development and integrate development with the provision of infrastructure.

2. They are located in strategic locations that will be impacted by land use decisions not totally within the control of the City of Brentwood.

3. A mix of land uses in the area is desirable and the City desires to maintain the flexibility to adjust to changing market conditions.

4. Effective land use controls are needed to preserve the integrity of existing adjacent development while enabling the property owners to adjust to changing market conditions.

Priority Area (PA) – A Priority Area is an overlay designation that identifies an area of the city that warrants particular attention with respect to the land use mix, jobs/housing balance, and overall design and integration of future development projects. In addition to the parcel-specific land use designations assigned to all parcels within a Priority Area, a Priority Area overlay designation establishes a set of overarching guidance policies that shall be used by the City to ensure quality and integrated development that assists in meeting the economic development goals of the General Plan. Development within a Priority Area shall be consistent with the underlying land use designations. One Priority Area is identified in the General Plan.

TABLE 2.0-1: LAND USE DESIGNATION ACREAGES

LAND USE DESIGNATION	*TOTAL ACRES*	
	CITY LIMITS	*PLANNING AREA*
Residential Land Uses		
Ranchette Estate	159.2	433.5
Residential- Very Low Density	1,128.2	311.9
Residential- Low Density	2,693.5	318.8
Residential- Medium Density	1,118.1	0
Residential- High Density	97.8	0
Residential- Very High Density	37.5	0
Commercial, Office, and Industrial Land Uses		
Business Park	151.7	50.4
Professional Office	53.5	0
General Commercial	206.8	4.8
Regional Commercial	195.2	61.4
Industrial	27.8	0
Specific Plan and Mixed-Use Land Uses		
Mixed Use Pedestrian Transit	255.4	0
Brentwood Boulevard Specific Plan	260.7	15.7
Downtown Specific Plan	62.9	0
Planned Development	126.4	0
Public and Semi-Public Land Uses		
Public Facilities	254.5	339.3
Semi-Public Facility	665.6	0.3
Park	357.1	3,331.2
School	273.9	38.2
Community College	17.0	0
Future Development Areas		
SPA 1	0	378.2
SPA 2	0	815.2
Urban Reserve	0	79.5
Conservation Land Uses and Lands with No Designation		
Agricultural Conservation	3.6	12,077.4
Permanent Open Space	92.5	383.1
No Designation (right-of-way, etc.)	183.0	68.6
Totals	**8,422.0**	**18,707.6**

SOURCE: DE NOVO PLANNING GROUP, 2013

2.4 GENERAL PLAN BUILDOUT ANALYSIS

The analysis in this EIR addresses two "buildout" scenarios associated with the proposed General Plan, as described in greater detail below.

Table 2.0-2 shows the maximum level of new development, including housing units, non-residential building square footage, and population growth that may occur within the city limits and the Planning Area under General Plan buildout conditions.

Table 2.0-3 includes a comparison of the existing General Plan Land Use Map and the proposed General Plan Land Use Map in terms of population, housing units, jobs, and the jobs-to-housing ratio.

In most cases in this EIR, the buildout analysis utilizes a 20-year horizon, and 2035 is assumed to be the buildout year of the General Plan. The year 2035 is used as the benchmark year for the cumulative analysis contained in this EIR. However, the traffic analysis is based on a future horizon year of 2040. The year 2040 was selected for the traffic analysis based on the future traffic volumes and analysis contained in the Contra Costa Transportation Agency (CCTA) regional travel demand model. The approach and methodology used in the cumulative traffic analysis is described in greater detail in Section 3.13 of this Draft EIR.

CITY LIMITS BUILDOUT

The EIR evaluates the maximum projected development that could occur within the existing city limits if every parcel in the city developed at or near the higher end of densities and intensities allowed under the proposed General Plan.

As shown in Table 2.0-2, buildout of the General Plan could yield up to 9,972 new housing units and 9,896,951 square feet of new non-residential building square footage within the city limits.

This new growth may increase the City's population by approximately 27,639 residents.[1] The full development of the new non-residential building square footage, which includes commercial, office, and industrial uses, may increase the employment opportunities in Brentwood by approximately 21,232 employees,[2] as shown in Table 2.0-3.

[1] Assumes 3.22 persons per household in new detached single-family residential units, and 2.38 persons per household in new multi-family residential units.

[2] Assumes one employee generated for: every 350 square feet of commercial space, every 295 square feet of office space, and every 575 square feet of industrial space.

PLANNING AREA BUILDOUT

The second development scenario addressed in the EIR is the maximum projected development that could occur within the existing city limits and the Planning Area if every parcel in the city and the Planning Area developed at or near the higher end of densities and intensities allowed under the proposed General Plan.

As shown in Table 2.0-2, buildout of the General Plan within the Planning Area could yield up to 3,642 new housing units and 2,994,116 square feet of new non-residential building square footage within the Planning Area.

The total combined buildout growth within the city limits and the Planning Area could yield up to 13,614 new housing units, 12,891,067 square feet of new non-residential uses, and new population growth of up to 39,058 persons.

TABLE 2.0-2: CITY LIMITS AND PLANNING AREA BUILDOUT POTENTIAL

LAND USE DESIGNATION	TOTAL ACRES		NEW HOUSING UNITS AT BUILDOUT		NEW NON-RESIDENTIAL BUILDING SQUARE FOOTAGE AT BUILDOUT		NEW POPULATION GROWTH AT BUILDOUT	
	CITY LIMITS	PLANNING AREA	CITY LIMITS	PLANNING AREA	CITY LIMITS	PLANNING AREA	CITY LIMITS	PLANNING AREA
Residential Land Uses								
Ranchette Estate	159.2	433.5	13	335	0	0	42	1,079
Residential- Very Low Density	1,128.2	311.9	489	540	0	0	1,575	1,739
Residential- Low Density	2,693.5	318.8	2,469	910	156,459.4	0	7,950	2,930
Residential- Medium Density	1,118.1	0	958	0	0	0	3,080	0
Residential- High Density	97.8	0	476	0	0	0	1,381	0
Residential- Very High Density	37.5	0	712	0	0	0	1,694	0
Commercial, Office, and Industrial Land Uses								
Business Park	151.7	50.4	171	110	1,502,956.9	889,525.3	407	262
Professional Office	53.5	0	0	0	519,927.3	0	0	0
General Commercial	206.8	4.8	45	0	986,173.8	832,65.2	145	0
Regional Commercial	195.2	61.4	0	0	1,070,924.8	1,203,920.7	0	0
Industrial	27.8	0	0	0	190,348.7	0	0	0
Specific Plan and Mixed-Use Land Uses								
Mixed Use Pedestrian Transit	255.4	0	1,154	0	2,961,375.4	0	2,746	0
Brentwood Boulevard Specific Plan	260.7	15.7	1,680	372	1,465,156.9	0	4,063	1,042

LAND USE DESIGNATION	TOTAL ACRES		NEW HOUSING UNITS AT BUILDOUT		NEW NON-RESIDENTIAL BUILDING SQUARE FOOTAGE AT BUILDOUT		NEW POPULATION GROWTH AT BUILDOUT	
	CITY LIMITS	PLANNING AREA	CITY LIMITS	PLANNING AREA	CITY LIMITS	PLANNING AREA	CITY LIMITS	PLANNING AREA
Downtown Specific Plan	62.9	0	274	0	162,045.3	0	652	0
Planned Development	126.4	0	1,189	0	633,877.8	0	2,830	0
Public and Semi-Public Land Uses								
Public Facility	254.5	339.3	310	0	27,865.0	0	998	0
Semi-Public Facility	665.6	0.3	0	0	110,339.9	3,589.5	0	0
Park	357.1	3,331.2	0	0	0	0	0	0
School	273.9	38.2	0	0	0	0	0	0
Community College	17.0	0	32	0	109,500.0	0	76	0
Future Development Areas								
SPA 1	0	378.2	0	792	0	733,915.9	0	2,491
SPA 2	0	815.2	0	583	0	79,899.9	0	1,877
Urban Reserve	0	79.5	0	0	0	0	0	0
Conservation Land Uses and Lands with No Designation								
Agricultural Conservation	3.6	12,077.4	0	0	0	0	0	0
Permanent Open Space	92.5	383.1	0	0	0	0	0	0
No Designation (right-of-way, etc.)	183.0	68.6	0	0	0	0	0	0
Totals	**8,422.0**	**18,707.6**	**9,972**	**3,642**	**9,896,951.1**	**2,994,116.6**	**27,639**	**11,419**

SOURCE: DE NOVO PLANNING GROUP, 2014

GROWTH PROJECTIONS

While no specific development projects are proposed as part of the General Plan Update, the General Plan will accommodate future growth in Brentwood, including new businesses, expansion of existing businesses, and new residential uses. Table 2.0-3 includes a comparison of the existing General Plan Land Use Map and the proposed General Plan Land Use Map in terms of population, housing units, jobs, and the jobs-to-housing ratio. As shown in Table 2.0-3, full buildout of the proposed General Plan Land Use Map within the city limits would result in a total population of 80,917, which is lower than the population projection of the existing General Plan Land Use Map.

TABLE 2.0-3: COMPARATIVE GROWTH PROJECTIONS, EXISTING GENERAL PLAN LAND USE MAP AND PROPOSED LAND USE MAP

	Population	Housing Units	Jobs	Jobs per Housing Unit
Existing Conditions (1/1/13)				
City	53,278	17,877	12,516	0.70
SOI/Planning Area	2,333	790	458	0.58
New Growth: City Limits				
Existing General Plan	35,944	13,955	19,655	1.41
Draft Land Use Map	27,639	9,972	21,232	2.13
New Growth: SOI/Planning Area				
Existing General Plan	28,208	10,665	17,189	1.61
Draft Land Use Map	11,419	3,642	6,276	1.72
Total New Growth: City Limits plus SOI/Planning Area				
Existing General Plan	64,152	24,620	36,844	1.50
Draft Land Use Map	39,058	13,614	27,508	2.02
Buildout Conditions: City				
Existing General Plan	89,222	31,832	32,171	1.01
Draft Land Use Map	80,917	27,849	33,748	1.21
Buildout Conditions: City/SOI/Planning Area				
Existing General Plan	119,763	43,287	49,818	1.15
Draft Land Use Map	92,336	31,491	40,024	1.27

SOURCE: DE NOVO PLANNING GROUP, 2013

2.5 PROJECT OBJECTIVES

The Brentwood General Plan is intended to reflect the desires and vision of Brentwood's residents, businesses, the Working Group, Planning Commission, City Council, and other decision-makers for the future development and operation of Brentwood. The following objectives are identified for the proposed update to the General Plan:

1. Reflect the current goals and vision expressed by city residents, businesses, decision-makers, and other stakeholders;
2. Address issues and concerns identified by city residents, businesses, decision-makers, and other stakeholders;
3. Protect Brentwood's family-oriented environment, character, and sense of community;
4. Provide a range of high-quality housing options;
5. Attract and retain businesses and industries that provide high-quality and high-paying jobs so that residents can live and work in Brentwood;
6. Preserve surrounding agricultural lands and the city's agricultural heritage;
7. Expand retail shopping opportunities to provide better local services and increased sales tax revenues;
8. Continue to maintain and improve the road network and provide increased transit opportunities;
9. Maintain strong fiscal sustainability and continue to provide high-quality services; and
10. Address new requirements of State law.

2.6 USES OF THE EIR AND REQUIRED AGENCY APPROVALS

This EIR may be used for the following direct and indirect approvals and permits associated with adoption and implementation of the proposed project.

CITY OF BRENTWOOD

The City of Brentwood is the lead agency for the proposed project. The updated Brentwood General Plan will be presented to the Planning Commission for review and recommendation and to the City Council for comment, review, and consideration for adoption. The City Council has the sole discretionary authority to approve and adopt the Brentwood General Plan. In order to approve the proposed project, the City Council would consider the following actions:

- Certification of the General Plan EIR;
- Adoption of required CEQA findings for the above action;

- Adoption of a Mitigation Monitoring and Reporting Program; and
- Approval of the General Plan Update.

SUBSEQUENT USE OF THE EIR

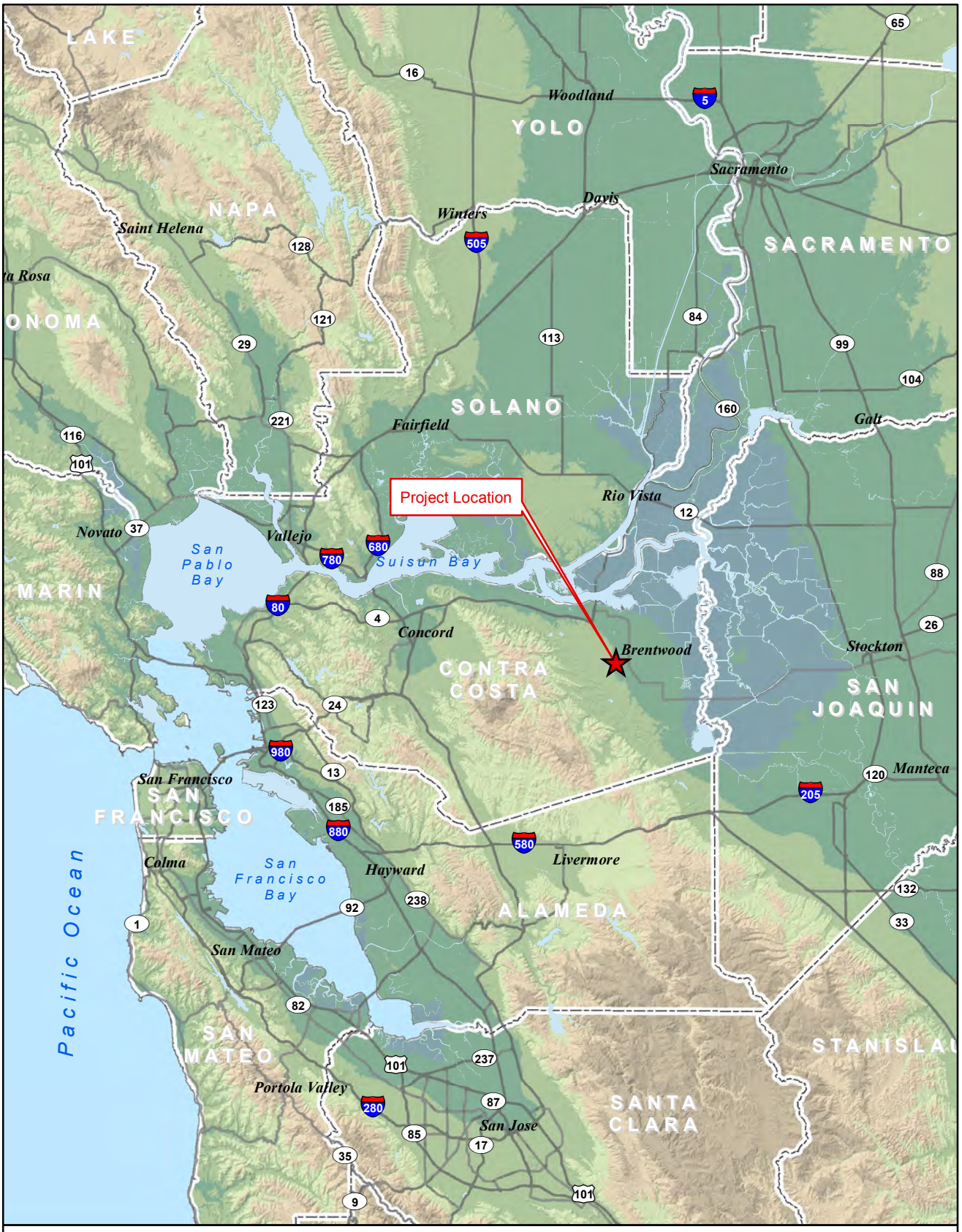
This EIR provides a review of environmental effects associated with implementation of the proposed General Plan. When considering approval of subsequent activities under the proposed General Plan, the City of Brentwood would utilize this EIR as the basis in determining potential environmental effects and the appropriate level of environmental review, if any, of a subsequent activity. Projects or activities successive to this EIR may include, but are not limited to, the following:

- Approval and funding of major projects and capital improvements;
- Future Specific Plan, Planned Unit Development, or Master Plan approvals;
- Revision to the Brentwood Zoning Ordinance;
- Water, sewer, and other infrastructure master plans;
- Bicycle and Pedestrian Master Plan;
- Development plan approvals, such as tentative subdivision maps, variances, conditional use permits, and other land use permits;
- Development Agreements;
- Property rezoning consistent with the General Plan;
- Permit issuances and other approvals necessary for public and private development projects;
- Issuance of permits and other approvals necessary for implementation of the General Plan;
- Sphere of Influence (SOI) updates prepared by LAFCO; and
- Annexations processed by LAFCO.

OTHER GOVERNMENTAL AGENCY APPROVALS

City approval of the proposed project would not require any actions or approvals by other public agencies. Subsequent projects and other actions to support implementation of the proposed project would require actions, including permits and approvals, by other public agencies that may include, but are not necessarily limited to:

- California Department of Fish and Wildlife (CDFW) approval of potential future streambed alteration agreements, pursuant to Fish and Game Code. Approval of any future potential take of State-listed wildlife and plant species covered under the California Endangered Species Act.
- California Department of Transportation (Caltrans) approval of projects and encroachment permits for projects affecting State highway facilities.
- Regional Water Quality Control Board (RWQCB) approval for National Pollution Discharge Elimination System compliance, including permits and Storm Water Pollution Prevention Plan approval and monitoring.
- Contra Costa Local Agency Formation Commission (LAFCO) approvals for annexation of any lands into the boundaries of the City of Brentwood.
- U.S. Army Corps of Engineers (ACOE) approval of any future wetland fill activities, pursuant to the Clean Water Act.
- U.S. Fish and Wildlife Service (USFWS) approvals involving any future potential take of Federally listed wildlife and plant species and their habitats, pursuant to the Federal Endangered Species Act.


Project Location
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SONOMA
YOLO
SOLANO
SACRAMENTO
CONTRA COSTA
SAN JOAQUIN
MARIN
SAN FRANCISCO
SAN MATEO
SANTA CLARA
ALAMEDA
STANISLAU
Woodland
Sacramento
Davis
Winters
Saint Helena
Fairfield
Rio Vista
Galt
Vallejo
Novato
Concord
Brentwood
Stockton
Manteca
Livermore
Hayward
San Francisco
San Mateo
Colma
Portola Valley
San Jose
San Pablo Bay
Suisun Bay
San Francisco Bay
Pacific Ocean
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February 19, 2014
BRENTWOOD GENERAL PLAN UPDATE
Figure 2.0-1: Regional Location Map
De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

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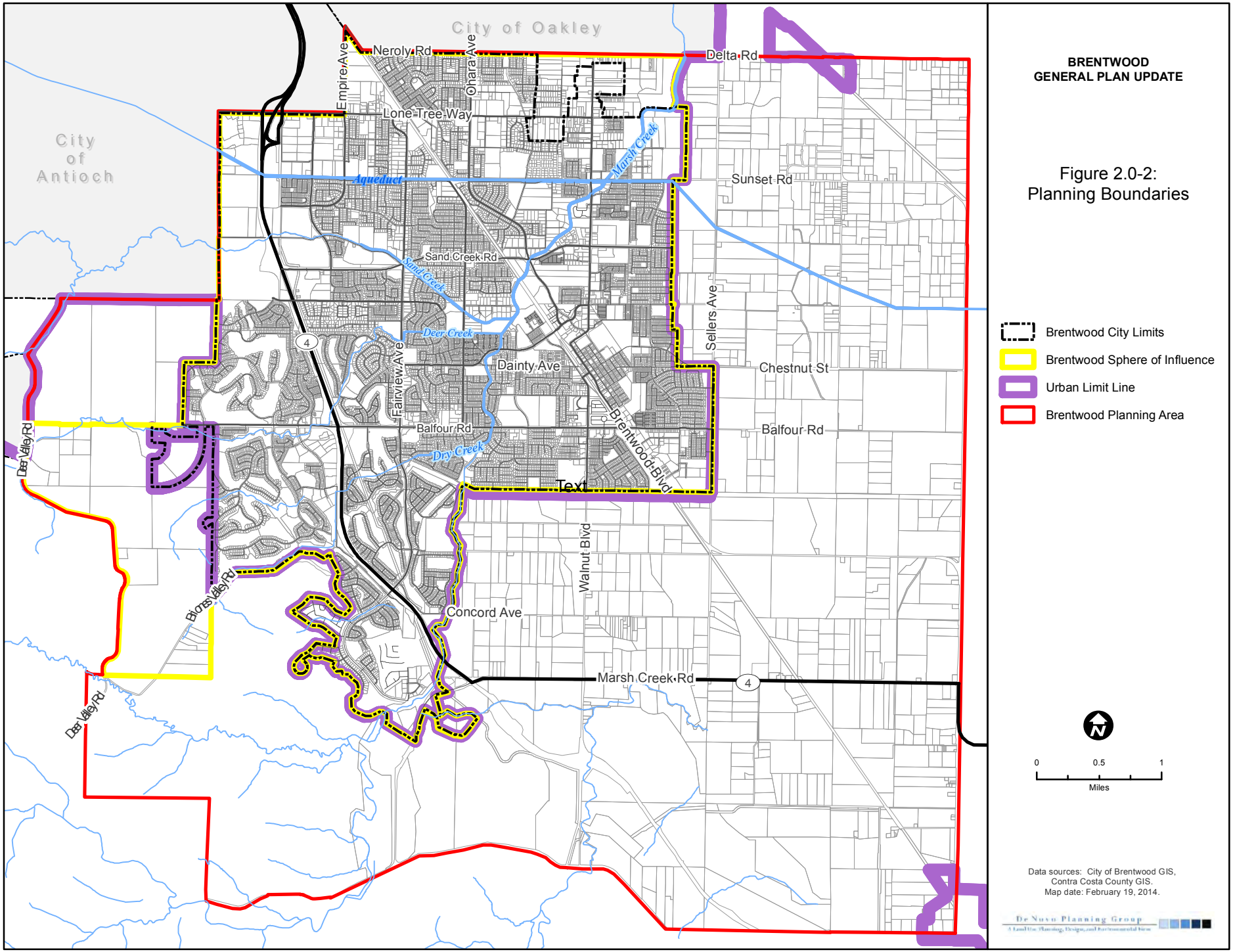
City of Oakley
City of Antioch
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Delta Rd
Empire Ave
O'hara Ave
Lone Tree Way
Marsh Creek
Aqueduct
Sunset Rd
Sand Creek Rd
Sand Creek
Deer Creek
Sellers Ave
Dainty Ave
Chestnut St
Fairview Ave
Brentwood Blvd
Balfour Rd
Balfour Rd
Dry Creek
Deer Valley Rd
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Walnut Blvd
Concord Ave
Marsh Creek Rd
Deer Valley Rd
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BRENTWOOD
GENERAL PLAN UPDATE
Figure 2.0-2:
Planning Boundaries
Brentwood City Limits
Brentwood Sphere of Influence
Urban Limit Line
Brentwood Planning Area
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Data sources: City of Brentwood GIS,
Contra Costa County GIS.
Map date: February 19, 2014.
De Novo Planning Group

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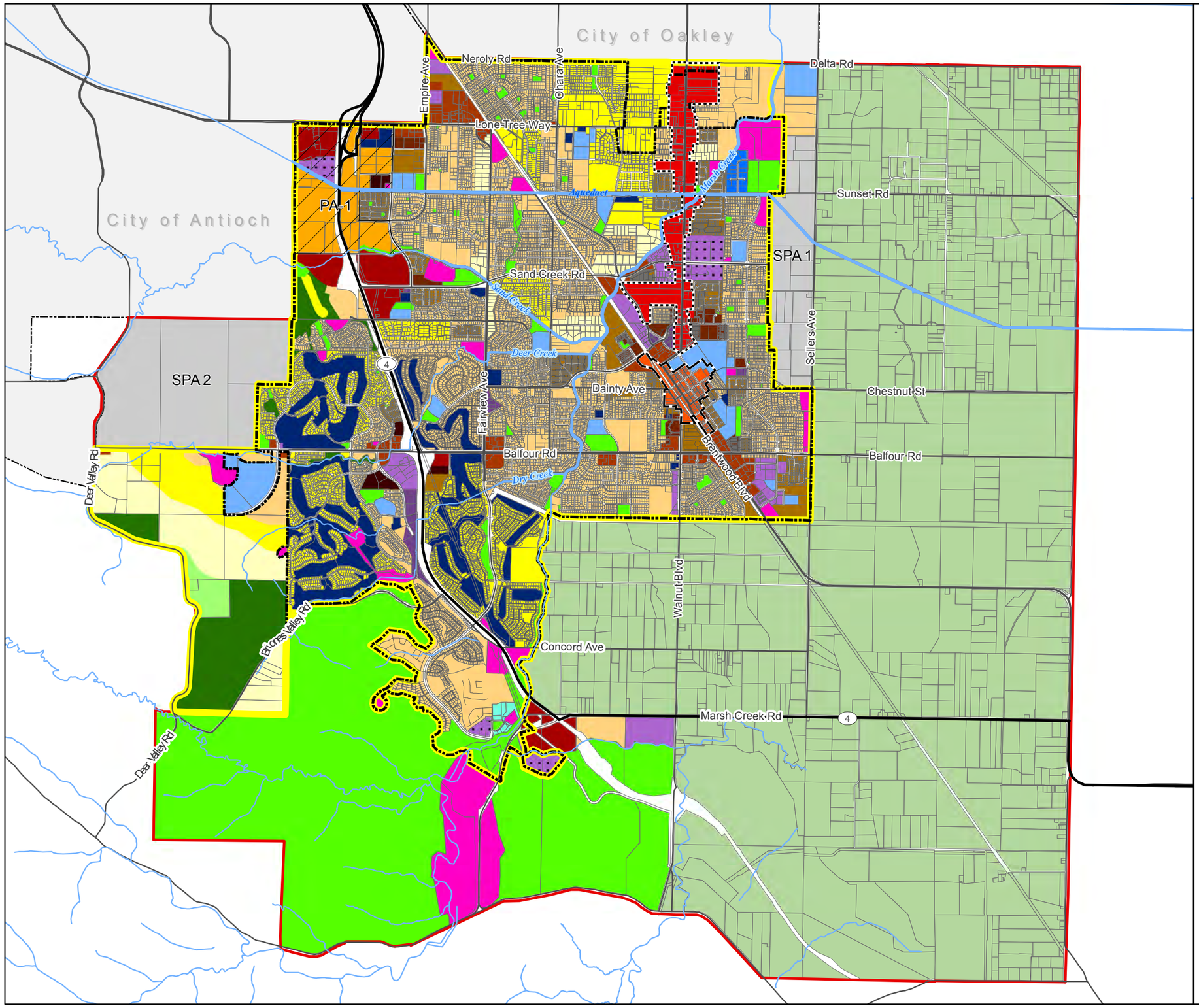

BRENTWOOD GENERAL PLAN UPDATE

Figure 2.0-3:
Draft Land Use Map

Land Use Designations

- DSP - Downtown Specific Plan
- BBSP - Brentwood Blvd Specific Plan
- CC - Community College
- I - Industrial
- UR - Urban Reserve
- AGCON - Agricultural Conservation
- P - Park
- P-OS - Permanent Open Space
- GC - General Commercial
- RC - Regional Commercial
- BP - Business Park
- PO - Professional Office
- PD - Planned Development
- PF - Public Facility
- SPF - Semi-Public Facility
- RE - Ranchette Estate
- R-VLD - Residential-Very Low Density
- R-LD - Residential-Low Density
- R-MD - Residential-Medium Density
- R-HD - Residential-High Density
- R-VHD - Residential-Very High Density
- MUPT - Mixed Use Pedestrian Transit
- SCH - School
- SPA - Special Planning Area

Planning Areas

- Brentwood City Limits
- Brentwood Sphere of Influence
- Brentwood Planning Area
- Brentwood Blvd. Specific Plan Area
- Downtown Specific Plan Area
- Priority Area (PA)

N

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Miles

Data sources: City of Brentwood GIS, Contra Costa County GIS, ESRI StreetMap North America. Map date: December 11, 2013. Revised January 24, 2014.

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

The city of Brentwood and the surrounding areas possess numerous scenic resources, many of which are found in the natural areas within the unincorporated areas of Contra Costa County. These resources enhance the quality of life for Brentwood residents, and provide for outdoor recreational, agricultural, and tourist-generating uses. Landscapes can be defined as a combination of four visual elements: landforms, water, vegetation, and man-made structures. Scenic resource quality is an assessment of the uniqueness or desirability of a visual element.

This section was prepared based on existing reports and literature for Brentwood and the surrounding areas in Contra Costa County. Additional sources of information included the California Department of Transportation's (Caltrans) Designated Scenic Route map for Contra Costa County. A reconnaissance-level visual resource survey of the Planning Area was conducted in the fall of 2012.

This section provides a background discussion of the scenic highways and corridors, and natural scenic resources such as rivers, wildlife areas, and prominent visual features found in the Brentwood Planning Area. This section is organized with an existing setting, regulatory setting, and impact analysis.

CONCEPTS AND TERMINOLOGY

The aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area (Federal Highway Administration 1983). Scenic quality can best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area (U.S. Bureau of Land Management 1980). Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of views seen, distance of the viewers, and viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular viewshed. These terms and criteria are described in detail below.

Visual Character. Natural and artificial landscape features contribute to the visual character of an area or view. Visual character is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Urban features include those associated with landscape settlements and development, including roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character can vary significantly seasonally, even hourly, as weather, light, shadow, and elements that compose the viewshed change. The basic components used to describe visual character for most visual assessments are the elements of form, line, color, and texture of the landscape features (U.S. Forest Service 1974; Federal Highway Administration 1983). The appearance of the landscape is described in terms of the dominance of each of these components.

Visual Quality. Visual quality is evaluated using the well-established approach to visual analysis adopted by the Federal Highway Administration, employing the concepts of vividness, intactness, and unity (Federal Highway Administration 1983), which are described below.

- Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns.
- Intactness is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes, and in natural settings.
- Unity is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape.

Visual quality is evaluated based on the relative degree of vividness, intactness, and unity, as modified by visual sensitivity. High-quality views are highly vivid, relatively intact, and exhibit a high degree of visual unity. Low-quality views lack vividness, are not visually intact, and possess a low degree of visual unity.

Viewer Exposure and Sensitivity. The measure of the quality of a view must be tempered by the overall sensitivity of the viewer. Viewer sensitivity or concern is based on the visibility of resources in the landscape, proximity of viewers to the visual resource, elevation of viewers relative to the visual resource, frequency and duration of views, number of viewers, and type and expectations of individuals and viewer groups.

The importance of a view is related, in part, to the position of the viewer to the resource; therefore, visibility and visual dominance of landscape elements depend on their placement within the viewshed. A viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (Federal Highway Administration 1983). To identify the importance of views of a resource, a viewshed must be broken into distance zones of foreground, middle ground, and background. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer. Although distance zones in a viewshed may vary between different geographic region or types of terrain, the standard foreground zone is 0.25–0.5 mile from the viewer, the middle ground zone is from the foreground zone to 3–5 miles from the viewer, and the background zone is from the middle ground to infinity (U.S. Forest Service 1974).

Visual sensitivity depends on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and viewing duration. For example, visual sensitivity is generally higher for views seen by people who are driving for pleasure, people engaging in recreational activities such as hiking, biking, or camping, and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (U.S. Forest Service 1974; Federal Highway Administration 1983; U.S. Soil Conservation Service 1978). Commuters and non-recreational travelers have generally fleeting views and tend to focus on commute traffic, not on surrounding scenery; therefore, they are generally considered to have low visual sensitivity. Residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes; therefore, they are generally considered to have high visual

sensitivity. Viewers using recreation trails and areas, scenic highways, and scenic overlooks are usually assessed as having high visual sensitivity.

Judgments of visual quality and viewer response must be made based on a regional frame of reference (U.S. Soil Conservation Service 1978). The same landform or visual resource appearing in different geographic areas could have a different degree of visual quality and sensitivity in each setting. For example, a small hill may be a significant visual element on a flat landscape but have very little significance in mountainous terrain.

Scenic Highway Corridor. The area outside of a highway right-of-way that is generally visible to persons traveling on the highway.

Scenic Highway/Scenic Route. A highway, road, drive, or street that, in addition to its transportation function, provides opportunities for the enjoyment of natural and human-made scenic resources and access or direct views to areas or scenes of exceptional beauty (including those of historic or cultural interest). The aesthetic values of scenic routes often are protected and enhanced by regulations governing the development of property or the placement of outdoor advertising. Until the mid-1980's, general plans in California were required to include a Scenic Highways Element.

View Corridor. A view corridor is a highway, road, trail, or other linear feature that offers travelers a vista of scenic areas within a city or county.

3.1.1 ENVIRONMENTAL SETTING

NATURAL ENVIRONMENT

The city of Brentwood is located in the eastern valley area of Contra Costa County, immediately east of the Diablo Range. The city has historically been surrounded by agricultural land uses, consisting primarily of row crops, orchards, and grazing land. The topography of the city's Planning Area is characterized by the relatively flat terrain of the Central Valley, with gently sloping hills in the western and southwestern portion of the area approaching the foothills of the Diablo Range. The distant eastern slopes of the Diablo Range and the gently rolling hills rising out of the Planning Area, which are characterized by grassy, tree-studded hills, represent the most visually prominent natural features surrounding the city.

A significant visual feature outside the Brentwood Planning Area is Mount Diablo. Rising to an elevation of 3,849 feet above mean sea level, Mt. Diablo is a prominent landmark dominating the western skyline.

Lone Tree Valley, Horse Valley, Deer Valley, and Briones Valley form a set of drainage basins which collect seasonal rainfall and direct runoff into a network of small creeks in the Brentwood area. Marsh Creek is the largest of the waterways within the Planning Area, and has been dammed in the southern portion of the Planning Area to create the Marsh Creek Reservoir. Marsh Creek continues north from the reservoir, collecting water from Sand Creek, Deer Creek, and Dry Creek. Marsh Creek eventually converges with the San Joaquin River, north of the Planning Area.

Riparian vegetation generally represents a valuable scenic resource within any area. However, much of the naturally occurring riparian vegetation along the creeks in the Brentwood Planning Area has been reduced or eliminated due to flood control measures or agricultural encroachment in the past. The most well-developed riparian communities are found along Marsh Creek, south of its confluence with Dry Creek, and along Sand Creek, east of Fairview Avenue.

Expanses of agricultural lands surrounding the city of Brentwood define the visual character of portions of the city. Large open fields dominate particular areas of the city. The open space creates a visual contrast between Brentwood's rural heritage and the numerous suburban land uses that have emerged during the past decades, including single-family homes and retail, office, and light industrial developments.

BUILT ENVIRONMENT

The vast expanse of agricultural lands surrounding the city largely defines the visual character of Brentwood. Large open fields predominate to the south and east of the city. This open space creates a visual separation between Brentwood and the communities to the south and east, and conveys a rural character. Within the city itself, visual character is defined by the arrangement and composition of the urban development. Brentwood originally developed along a grid street system that was parallel and perpendicular to the Southern Pacific Railroad. Early growth was concentrated around the Downtown area and is evidenced by the traditional street patterns and the presence of mature trees and landscaping. As the city expanded, the street patterns developed along the more familiar north-south grid found in the western United States.

The Downtown area of Brentwood is the historic center of the city. The physical characteristics of the Downtown, including the mix of local-serving uses, historic buildings, and City Park located adjacent to City Hall and the Community Center, are essential to the character of Brentwood. Additionally, Downtown Brentwood contains enhanced streetscape design, including specialty paving at cross walks, street trees, historical light standards, and street furniture. This attention to design in the Downtown helps to maintain the character and uniqueness of the city.

Recent improvements to the main streets in Downtown Brentwood reflect the desire to reestablish the area as a visually inviting and pedestrian-friendly environment. However, ongoing development outside the original Downtown area has resulted in a change to the historical visual atmosphere. Broad arterial streets, modern shopping centers, and residential subdivisions with immature landscaping and similar architectural features all contribute to the current suburban appearance of Brentwood in areas beyond the Downtown.

Recent development in Brentwood has included large-scale regional serving commercial developments in the northwestern portions of the city, near the new alignment of State Route 4. State Route 4 previously passed through the center of the city along Brentwood Boulevard. The City is proposing to revitalize and encourage new development along an approximately two-mile portion of the Brentwood Boulevard (former State Route 4) corridor from Delta Road on the north to Second Street on the south, consisting of approximately 310 acres.

The Brentwood Boulevard Specific Plan establishes a framework to guide development and improvements for the area over several decades. The Specific Plan creates long-term opportunities

for change as the corridor transitions from an auto-oriented rural State route to a local arterial roadway with enhanced facilities for auto drivers, pedestrians, bicyclists, and transit riders. The Specific Plan includes a range of uses, including commercial, office, industrial, residential, mixed-use, and parks/open space.

SCENIC HIGHWAYS AND CORRIDORS

According to the California Scenic Highway Mapping System, administered by Caltrans, there are no officially designated State Scenic Highways in the vicinity of Brentwood. There are two officially designated scenic highway corridors in Contra Costa County: Interstate 680, from the Alameda County line to the junction with State Route 24; and State Route 24 from the east portal of the Caldecott tunnel to Interstate 680 near Walnut Creek. Neither of these officially designated scenic highway corridors provide views of Brentwood or the immediate surrounding areas.

There is, however, one Eligible State Scenic Highway Corridor within and adjacent to Brentwood that has not yet been officially designated. State Route 4, west of the junction with Byron Highway to the junction with State Route 160 in Antioch is designated as an Eligible State Scenic Highway Corridor.

Locally identified scenic routes within the Brentwood Planning Area include State Route 4, Camino Diablo Road, Marsh Creek Road, Walnut Boulevard, Deer Valley Road, and Lone Tree Way, as identified in the City of Brentwood 2001 General Plan Update EIR (p. 3.3-2). The scenic routes listed above have been identified as such due to the distant panoramic vistas of the Diablo Range and Mount Diablo in particular, as well as rural farmland views located in the flatland areas and the surrounding hillsides.

LIGHT AND GLARE

During the day, sunlight reflecting from structures is a primary source of glare, while nighttime light and glare can be divided into both stationary and mobile sources. Stationary sources of nighttime light include structure illumination, interior lighting, decorative landscape lighting, and streetlights. The principal mobile source of nighttime light and glare is vehicle headlamp illumination. This ambient light environment can be accentuated during periods of low clouds or fog.

The varieties of urban land uses in the Planning Area are the main source of daytime and nighttime light and glare. They are typified by single and multi-family residences, commercial structures, industrial areas, and streetlights. These areas and their associated human activities (inclusive of vehicular traffic) characterize the existing light and glare environment present during daytime and nighttime hours in the urbanized portions of the Planning Area. Areas outside of the city limits, near the fringes of the Planning Area are characterized primarily by agricultural uses and scattered low intensity residential development, and generally have lower levels of ambient nighttime lighting and daytime glare.

Sources of glare in urbanized portions of the Planning Area come from light reflecting off surfaces, including glass, and certain siding and paving materials, as well as metal roofing. The urbanized areas of Brentwood contain sidewalks and paved parking areas which reflect street and vehicle

lights. The existing light environment found in the project area is considered typical of suburban areas.

Sky glow is the effect created by light reflecting into the night sky. Sky glow is of particular concern in areas surrounding observatories, where darker night sky conditions are necessary, but is also of concern in more rural or natural areas where a darker night sky is either the norm or is important to wildlife. Due to the urban nature of the city limits, a number of existing light sources affect residential areas and illuminate the night sky. Isolating impacts of particular sources of light or glare is therefore not appropriate or feasible for the project.

3.1.2 REGULATORY SETTING

FEDERAL

There are no Federal regulations that apply to the proposed project related to visual resources in the study area.

STATE

California Department of Transportation – California Scenic Highway Program

California's Scenic Highway Program was created by the Legislature in 1963 to preserve and protect scenic highway corridors from change, which would diminish the aesthetic value of lands adjacent to highways. The State laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq.

The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. These highways are identified in Section 263 of the Streets and Highways Code. A list of California's scenic highways and map showing their locations may be obtained from the Caltrans Scenic Highway Coordinators.

If a route is not included on a list of highways eligible for scenic highway designation in the Streets and Highways Code Section 263 et seq., it must be added before it can be considered for official designation. A highway may be designated scenic depending on the extent of the natural landscape that can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view.

When a local jurisdiction nominates an eligible scenic highway for official designation, it must identify and define the scenic corridor of the highway. A scenic corridor is the land generally adjacent to and visible from the highway. A scenic highway designation protects the scenic values of an area. Jurisdictional boundaries of the nominating agency are also considered, and the agency must also adopt ordinances to preserve the scenic quality of the corridor or document such regulations that already exist in various portions of local codes. These ordinances make up the scenic corridor protection program.

To receive official designation, the local jurisdiction must follow the same process required for official designation of State Scenic Highways. The minimum requirements for scenic corridor protection include:

- Regulation of land use and density of development;
- Detailed land and site planning;
- Control of outdoor advertising (including a ban on billboards);
- Careful attention to and control of earthmoving and landscaping; and
- Careful attention to design and appearance of structures and equipment.

LOCAL

City of Brentwood Urban Forest Guidelines

The City of Brentwood has developed the Urban Forest Guidelines to assist landscape architects, city planners, and designers to specify the types of trees to be planted in order to create a more beautiful and unified city. Homeowners can also benefit as they will be able to use these guidelines as a reference to make informed choices when planting trees.

Trees add scale and comfort to streets and their colors, shapes, and textures enhance the atmosphere and the identity of the city. The city's trees can be thought of as an "urban forest," and can be a diverse mixture of tree species. There are many growth characteristics and tree forms in street trees, and attention needs to be given to the trees chosen for individual projects. Street trees will grow for many years, and they must be properly placed and intelligently managed to maximize effects and minimize problems.

City of Brentwood Commercial and Industrial Design Guidelines

The planning and design guidelines contained in the Brentwood Commercial and Industrial Design Guidelines apply to any nonresidential use and/or building structure in any zone within the city of Brentwood. They are in addition to the Design and Site Development Review requirements contained in Brentwood Municipal Code Chapter 17.820.

Because of their special characteristics, additional specific design guidelines are provided for the following:

- Downtown Brentwood
- Highway 4 Delta Expressway
- Public and Institutional Buildings

City of Brentwood Municipal Code, Chapter 17.820: Design and Site Development Review

The purpose of these regulations is to allow design and site development review of all developments, signs, buildings, structures, and other facilities constructed or modified in any zone where design and site development review is required, in order thereby to foster a good design character through consideration of aesthetic and functional relationships to surrounding development, and in order to further enhance the city's appearance, and the livability and usefulness of properties.

3.1.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on aesthetics if it will:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

IMPACTS AND MITIGATION MEASURES

Impact 3.1-1: General Plan implementation could result in substantial adverse effects on visual character, including impacts to scenic vistas or scenic resources (Significant and Unavoidable)

While the Brentwood Planning Area contains numerous areas and viewsheds with relatively high scenic value, there are no officially designated scenic vista points in the Planning Area. Additionally, as described above, there are no officially designated scenic highways located in the vicinity of Brentwood. Significant visual resources in the Planning Area include views of the Mount Diablo and the Diablo Range; views of Lone Tree Valley, Horse Valley, Deer Valley, and Briones Valley; expansive views of agricultural lands, particularly to the south and east of the city; wildlife habitat areas and natural riparian areas along Marsh Creek, Sand Creek, Deer Creek, and Dry Creek; Marsh Creek Reservoir; gently rolling hillsides with natural grasslands and oak tree habitat;

and Marsh Creek State Park[1]. These resources can be viewed from numerous public and private vantage points throughout the city and Planning Area, including highways, roads, open space areas, and private residences and businesses.

Buildout of the proposed General Plan would allow for new development to occur in areas that have historically been used for agricultural operations and areas that have been previously undeveloped, which remain in a naturalized condition. The introduction of new development into previously undisturbed areas or areas that have been historically used for agricultural operations may result in potentially significant impacts to scenic resources or result in the degradation of the Planning Area's visual character. Additionally, new development may result in changes to the skyline throughout the Planning Area, which may obstruct or interfere with views of the surrounding hillsides, Mount Diablo, the Diablo Range, and the foothill areas surrounding the Brentwood Planning Area.

Buildout under the proposed General Plan and implementation of the General Plan Land Use Map has the potential to result in new and expanded development along highway corridors with high scenic values, even though these corridors are not officially designated as State Scenic Highways. State Route 4 is the principal highway corridor through the Brentwood Planning Area. Development under the proposed General Plan and the land use designations identified on the Land Use Map would allow for increased commercial, business park, mixed-use, and residential land uses along the State Route 4 corridor, including on lands to the west of State Route 4 which are primarily undeveloped. Mount Diablo is the most prominent and visually stunning natural feature visible from the city and the Planning Area, and is located to the west of Brentwood. New development within the Planning Area, including new development west of State Route 4 and new development within SPA 2, has the potential to interrupt views of Mount Diablo and the surrounding naturalized foothills and hillsides from numerous vantage points within Brentwood.

However, the Brentwood General Plan has been developed to preserve expansive areas of open space and to ensure that new development is located in and around existing urbanized areas, thus ensuring that new development is an extension of the existing urban landscape and minimizes

[1] In 2001, the State approved $3 million as part of California's 2001-2002 fiscal year budget that was used to protect 4,000 acres of open space in Contra Costa County on the Cowell Ranch Property, immediately south of Brentwood. The Cowell Ranch/John Marsh State Historic Park encompasses nearly 4,000 acres of natural habitat, wildlife, and unique cultural features, including the historic John Marsh House. Through the efforts of concerned citizens, as well as The Trust for Public Land and other public entities, this is one of California's newest State parks, although not currently open to the public. At a January 27, 2012 public meeting, the California State Park and Recreation Commission approved the General Plan and certified the Environmental Impact Report (EIR) for the Cowell Ranch/John Marsh State Historic Park and, in a separate action, named it Marsh Creek State Park.

interruption of views of Mount Diablo, local hillsides, natural resources, riparian areas, open space, and agricultural lands.

Future development would be required to be consistent with the General Plan. A central theme of the General Plan is to preserve and protect the city's natural resources and agricultural heritage and character by concentrating new growth in and around existing urbanized areas, and protecting the existing visual character of the Planning Area. This is expressed in Goal LU 5 in the Land Use Element and is supported by policies LU 5-1 and LU 5-2, which call for the protection of agricultural lands and open space lands surrounding the city from urban development. Goal COS 1 and Policies COS 1-1 through 1-9 in the Conservation and Open Space Element also promote the protection and preservation of agricultural and open space lands throughout the Planning Area. Goal COS 7 and Policies COS 7-1 through 7-4 protect hillsides and ridgelines from visual impacts associated with urban development, and Policy COS 7-3 includes specific language that preserves and protects prominent community views of scenic resources, including Mount Diablo, local hills and ridgelines, and open space areas surrounding Brentwood, during the review of development proposals.

Additionally, the General Plan Land Use Map identifies the majority of lands outside of the city limits, but inside the Planning Area, as Agricultural Conservation lands. This land use designation would ensure that these areas remain relatively undeveloped, and assists in preserving the scenic value of the lands surrounding the city limits to the east and south. Future development would be required to be consistent with the proposed General Plan and the General Plan Land Use Map.

In addition to the goals and policies identified above that provide protection for open space resources and visually prominent resources in the Planning Area, a range of goals, policies, and actions contained in the Land Use Element are intended to maintain and enhance the overall visual character of the Planning Area, and to avoid the installation of structures or features that conflict with the character of the surrounding area. Goal LU 6 seeks to maintain and enhance the visual quality of Brentwood by promoting the highest standards of architecture and site design for all development projects. Policies LU 6-1 through LU 6-7 and Actions LU 6a through LU 6g further support and promote a quality built environment through the use of design guidelines and maintaining neighborhood character and development compatibility.

The implementation of the policies and actions contained in the Land Use Element and Conservation and Open Space Element listed below would ensure that new urban residential and non-residential development in the Brentwood Planning Area is located in and around existing urbanized areas and developed to be visually compatible with nearby open space resources, which would limit impacts to scenic resources and limit visual degradation by preserving extensive areas of open space, agricultural lands, and undisturbed areas surrounding the Planning Area. This holistic land use approach would reduce impacts to visual resources by concentrating new development around existing development, and maximizing opportunities for open space preservation and continued agricultural use of lands outside of established urban areas. Additionally, the implementation of the policies and actions contained in the Land Use Element would further ensure that new development is designed in a way that enhances the visual quality

of the community, compliments the visual character of the city, and that adverse effects on public views are minimized.

However, even with the implementation of the policies and actions in the Brentwood General Plan, the potential for new development to interrupt scenic views, including views of Mount Diablo and the foothills of the Diablo Range, in addition to new development on agricultural or undeveloped lands, would remain. Existing scenic views may be diminished or obscured following buildout of the Brentwood General Plan. While the General Plan policies and actions would ensure that impacts are reduced to the greatest extent feasible, the only method to completely avoid impacts to scenic resources would be to severely limit the development potential on all undeveloped lands, including development of jobs-generating uses along the State Route 4 corridor west of the city. This type of mitigation is not consistent with the objective of the Brentwood General Plan to support local employment opportunities and expand the local jobs base. Therefore, the impact would be **significant and unavoidable**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy LU 1-4: Require new development to occur in a logical and orderly manner, focusing growth on infill locations and areas designated for urbanization on the Land Use Map (Figure LU-1), and be subject to the ability to provide urban services, including paying for any needed extension of services.

Policy LU 1-5: Encourage new development to be contiguous to existing development, whenever possible.

Policy LU 1-6: Encourage early annexation of all lands within the City's Sphere of Influence, provided the following criteria are met:

1. *The land is within the Sphere of Influence and Urban Limit Line.*
2. *The capacity of the water, sewer, fire, school, and police services are adequate to service the area.*
3. *The area to be annexed is contiguous to existing developed areas.*

Policy LU 5-1: Maintain significant areas of permanent agricultural lands and open space surrounding the city limits.

Policy LU 5-2: Protect agricultural land from urban development except where the General Plan Land Use Map has designated the land for urban uses.

Policy LU 6-1: Create residential areas in Brentwood that include innovative designs which are linked with bikeways and pedestrian trails, commercial and employment centers, and transit stops.

Policy LU 6-2: Maintain the character of existing neighborhoods by ensuring new development is compatible in style, size, color, and footprint with the existing residences in the neighborhood.

Policy LU 6-3: Residential neighborhoods should be well-defined with park and recreation facilities, schools, open space, and neighborhood commercial land uses that incorporate unifying landscape and architectural themes and provide visible functional centers.

Policy LU 6-4: Apply design standards regulating setbacks, landscaping, screening, and architectural style to new residential development and rehabilitation projects.

Action LU 6-5: Ensure that the development of business parks includes orderly land planning, high quality architectural and landscape design, integrated communication and technology infrastructure, building flexibility, and diverse amenities and environmental controls.

Policy LU 6-6: Encourage quality landscape and design.

Policy COS 1-1: General Plan land use designations that include agriculture, permanent open space, parks, and similar uses, as well as waterways (i.e., Marsh Creek, Dry Creek, Deer Creek, and Sand Creek), shall be considered open space.

Policy COS 1-2: Preserve open space for conservation, recreation, and agricultural uses.

Policy COS 1-3: Conversion of open space, as defined under Policy COS 1-1, to developed residential, commercial, industrial, or other similar types of uses, shall be strongly discouraged. Undeveloped land that is designated for urban uses may be developed if needed to support economic development and if the proposed development is consistent with the General Plan Land Use Map.

Policy COS 1-4: Where possible, integrate open space and stream corridors with trails and other recreational open space in an environmentally sustainable manner.

Policy COS 1-5: Recognize urban open space as essential to maintaining a high quality of life within the city limits of Brentwood.

Policy COS 1-6: Support regional and local natural resource preservation plans of public agencies that retain and protect open space within the city limits, the Sphere of Influence, and the Planning Area.

Policy COS 1-7: Encourage public and private efforts to preserve open space.

Policy COS 1-8: Common or private open space that is not City property shall be privately maintained.

Policy COS 1-9: Encourage the protection and incorporation of existing, native, mature, non-orchard trees and areas of natural vegetation as part of new development.

Policy COS 2-1: Support and encourage the preservation of agricultural lands throughout Brentwood's Planning Area, particularly in areas to the south and east of the city limits.

Policy COS 2-2: Maintain permanent agricultural lands surrounding the city limits to serve as community separators and continue the agricultural heritage of Brentwood.

Policy COS 2-3: Encourage and support programs that create or establish permanent agricultural areas in Brentwood's Planning Area.

Policy COS 2-4: Participate in regional planning efforts with agencies such as Contra Costa County, the cities of Antioch and Oakley, land trusts, and other regional partners to establish and maintain permanent agricultural areas surrounding Brentwood.

Policy COS 2-5: Work with the Local Agency Formation Commission (LAFCO) on issues of mutual concern including the conservation of agricultural land through consistent use of LAFCO policies, particularly those related to conversion of agricultural lands and establishment of adequate buffers between agricultural and non-agricultural uses, and the designation of a reasonable and logical Sphere of Influence (SOI) boundary for the City.

Policy COS 3-4: Conserve existing native vegetation where possible and integrate regionally native plant species into development and infrastructure projects where appropriate.

Policy COS 3-5: Avoid removal of large, mature trees that provide wildlife habitat or contribute to the visual quality of the environment to the greatest extent feasible through appropriate project design and building siting. If full avoidance is not possible, prioritize planting of replacement trees on-site over off-site locations.

Policy COS 4-10: Where feasible, encourage and support multipurpose detention basins that provide water quality protection, storm water detention, open space amenities, and recreational amenities.

Policy COS 7-1: Protect Brentwood's ridgelines (hilltops and steep hillsides) from erosion, slope failure, and development.

Policy COS 7-2: Preserve the topography of Brentwood's hills by discouraging unnecessary leveling/grading activities prior to site-building on hillsides where development is permitted.

Policy COS 7-3: Preserve and protect prominent community views of scenic resources, including Mount Diablo, local hills and ridgelines, and open space areas surrounding Brentwood, and consider community visual access and view corridors when reviewing development proposals.

Policy COS 7-4: Discourage development on hillsides and ridgelines where structures would interrupt the skyline.

ACTIONS

Action LU 1c: Prioritize the processing of development applications for infill, underutilized, or vacant parcels designated for urban uses over those projects requiring annexation.

Action LU 5a: Continue to designate agricultural lands to the south and east of the city limits as Agricultural Conservation on the Land Use Map.

Action LU 6a: Implement the Commercial and Industrial Design Guidelines and Residential Design Guidelines during the review and permitting of all new development projects.

Action LU 6b: Update the Municipal Code and the Commercial and Industrial Design Guidelines for non-residential uses to include standards that promote attractive and sustainable development for commercial, industrial, office, institutional, and other non-residential uses and that address the following provisions:

1. *Site planning sensitive to the natural environment and that addresses creating functional and attractive places.*

2. *Criteria to ensure outdoor lighting, trash receptacles, fencing, and seating space are carefully considered as integral elements of the landscape.*

3. *Landscaping should utilize plant materials in a logical and orderly manner to define spatial organization, relate buildings and other structures, incorporate various site elements, promote consistency throughout the development, and be scaled to site structures.*

4. *Require separate vehicle access, pedestrian pathways, and secured bicycle parking within the internal site plan of new commercial, office, mixed use, and public facility developments.*

5. *Criteria for screening rooftop and ground level mechanical equipment (e.g. satellite TV dishes, telephone and electrical boxes, heating, cooling, and ventilating systems, and trash sites, etc.) from public view, unless prohibited by the utility provider.*

6. *Standards for building design, architecture, and placement that incorporates a pedestrian scale with frontages oriented toward the street front or public gathering areas, varied articulated facades, windows and building features, reduced or zero setbacks where appropriate; and community design features, such as landscaping, entry features, fountains, plazas, pedestrian furniture, and similar features.*

7. *Requirements for larger projects to include community design and gathering features, such as entry features, outdoor benches, art, plazas, seating areas, fountains, etc.*

8. *Minimize vehicular, bicycle, and pedestrian conflicts.*

9. *Maximize access to commercial uses, recreational uses, employment, public services, and other destinations using a minimum of pavement.*

Action LU 6c: Periodically review and update the Residential Design Guidelines and the Commercial and Industrial Design Guidelines to ensure high quality design throughout Brentwood.

Action LU 6d: Implement the Brentwood Boulevard Specific Plan and Downtown Specific Plan to ensure quality design of the built environment within these specific plan areas.

Action LU 6e: Create streetscape and landscaping design standards that will help enhance the character and create a sense of identity for new development within Brentwood, while promoting the use of native and drought-tolerant plant and tree species.

Action LU 6f: Implement the Brentwood Urban Forest Guidelines to provide for an attractive and healthy mix of street trees and urban landscaping throughout the city.

Action LU 6g: Use assessment districts, homeowners' associations, and similar programs to install and maintain street trees, landscaping, fencing, landscaped sound walls, and other rights of way improvements.

Action COS 1a: Review all development proposals involving unincorporated land within the jurisdiction of Contra Costa County, and within or adjacent to the Sphere of Influence or Planning Area, to ensure adequate preservation of community separators and open space resources.

Action COS 7a: Require assessment of critical public views and ridgelines as part of the project review process in order to ensure that projects protect natural resources through proper site planning, building design, and landscaping.

Action COS 7b: Develop and adopt a hillside grading and development ordinance. The ordinance should include standards for slope stability, building heights, lot coverage, ridgeline and site line protection, drainage, revegetation, erosion control, emergency vehicle access, and other standards determined to be applicable by the City.

Impact 3.1-2: General Plan implementation could result in the creation of new sources of nighttime lighting and daytime glare (Less than Significant)

The primary sources of daytime glare are generally sunlight reflecting from structures and other reflective surfaces and windows. Implementation of the proposed General Plan would introduce new sources of daytime glare into previously undeveloped areas of the Planning Area and increase the amount of daytime glare in existing urbanized areas. The General Plan Land Use Map identifies areas for the future development of residential, commercial, industrial, recreational, and public uses. Such uses may utilize materials that produce glare. Daytime glare impacts would be most severe in areas that have been previously undisturbed, and in areas that receive a high level of daily viewership, such as the State Route 4 corridor and areas around existing residential development.

The primary sources of nighttime lighting are generally from exterior building lights, street lights, and vehicle headlights. Exterior lighting around commercial and industrial areas may be present throughout the night to facilitate extended employee work hours, ensure worker safety, and to provide security lighting around structures and facilities. Nighttime lighting impacts would be most severe in areas that do not currently experience high levels of nighttime lighting. Increased nighttime lighting can reduce visibility of the night sky, resulting in fewer stars being visible and generally detracting from the quality of life in Brentwood.

Future development would be required to be consistent with the General Plan, as well as lighting and design requirements in the Brentwood Municipal Code. The proposed General Plan contains policies and actions related to the regulation and reduction of daytime glare and nighttime lighting. Implementation of Action LU 3c would require the review of all commercial and industrial development projects in order to reduce lighting impacts on adjacent properties and to reduce

lighting impacts to the night sky. Actions LU 6a, LU 6b, and LU 6c require implementation of the City's Design Guidelines, as well as periodic updates to them and the Municipal Code. These actions, and implementation of the Design Guidelines, would ensure that new development projects utilize appropriate building materials that do not result in significant increases in daytime glare. Additionally, Policy LU 3-5 calls for active implementation of the Downtown Specific Plan and Brentwood Boulevard Specific Plan, both of which include standards for building facades that include lighting, which would reduce potential glare and nighttime lighting impacts in these areas of the city.

Through the implementation of these policies and actions during the development review process, the City can ensure that adverse impacts associated with daytime glare and nighttime lighting are reduced to a **less than significant** level.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy LU 3-5: Actively promote implementation of the Downtown Specific Plan and Brentwood Boulevard Specific Plan, and periodically update these long-range planning documents as necessary.

ACTIONS

Action OS 1f: Review all development proposals, planning projects, and infrastructure projects to ensure that open space and scenic resource impacts are reduced by maximizing design features that preserve a sense of open space and by minimizing off-site and night sky impacts of outdoor lighting consistent, with the requirements of the Land Use Code.

Action LU 6a: Implement the Commercial and Industrial Design Guidelines and Residential Design Guidelines during the review and permitting of all new development projects.

Action LU 6b: Update the Municipal Code and the Commercial and Industrial Design Guidelines for non-residential uses to include standards that promote attractive and sustainable development for commercial, industrial, office, institutional, and other non-residential uses and that address the following provisions:

1. *Site planning sensitive to the natural environment and that addresses creating functional and attractive places.*
2. *Criteria to ensure outdoor lighting, trash receptacles, fencing, and seating space are carefully considered as integral elements of the landscape.*
3. *Landscaping should utilize plant materials in a logical and orderly manner to define spatial organization, relate buildings and other structures, incorporate various site elements, promote consistency throughout the development, and be scaled to site structures.*
4. *Require separate vehicle access, pedestrian pathways, and secured bicycle parking within the internal site plan of new commercial, office, mixed use, and public facility developments.*

5. *Criteria for screening rooftop and ground level mechanical equipment (e.g. satellite TV dishes, telephone and electrical boxes, heating, cooling, and ventilating systems, and trash sites, etc.) from public view, unless prohibited by the utility provider.*

6. *Standards for building design, architecture, and placement that incorporates a pedestrian scale with frontages oriented toward the street front or public gathering areas, varied articulated facades, windows and building features, reduced or zero setbacks where appropriate; and community design features, such as landscaping, entry features, fountains, plazas, pedestrian furniture, and similar features.*

7. *Requirements for larger projects to include community design and gathering features, such as entry features, outdoor benches, art, plazas, seating areas, fountains, etc.*

8. *Minimize vehicular, bicycle, and pedestrian conflicts.*

9. *Maximize access to commercial uses, recreational uses, employment, public services, and other destinations using a minimum of pavement.*

Action LU 6c: Periodically review and update the Residential Design Guidelines and the Commercial and Industrial Design Guidelines to ensure high quality design throughout Brentwood.

Action LU 6d: Implement the Brentwood Boulevard Specific Plan and Downtown Specific Plan to ensure quality design of the built environment within these specific plan areas.

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This section provides a background discussion of agricultural lands, agricultural resources, and forest/timber resources found in the Brentwood Planning Area. This section is organized with an existing setting, regulatory setting, and impact analysis.

3.2.1 ENVIRONMENTAL SETTING

AGRICULTURAL RESOURCES

The 9,000 acres of Prime Farmland in the areas surrounding Brentwood constitute one of the largest, most productive farming regions remaining in the Bay Area. Agricultural lands surrounding the city are primarily designated *Agricultural Conservation (AC)* on the General Plan Land Use Map. This land use category encompasses lands with continuing commercial agricultural potential. The intent of this category is to retain primary agricultural use to the greatest extent possible. This is done by focusing public and private efforts to protect such land from the impacts and pressures of the nearby urban area as well as to enhance the income potential from agricultural use. Allowed uses include orchards, row crops, nurseries, grazing lands, open space, packing and shipping facilities, wineries, bed and breakfast inns, u-pick stands, farm equipment repair and services, and parks.

Important Farmlands

The California Department of Conservation, as part of its Farmland Mapping and Monitoring Program (FMMP), prepares Important Farmland Maps indicating the potential value of land for agricultural production. The Contra Costa County Important Farmland Map identifies five agriculture-related categories and three non-agricultural categories:

Prime Farmland: Prime farmland is land with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. The land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Farmland of Statewide Importance: Farmland of statewide importance is farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. The land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Unique Farmland: Unique farmland is farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

Farmland of Local Importance: Farmland of local importance is considered land important to the local agricultural economy but does not meet the criteria of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. Farmland of local importance in Contra Costa County is defined as the lands within the Tassajara area, extending eastward to the county boundary and bordered on the north by the Black Hills, the Deer, Lone Tree, and Briones Valleys, the Antioch

area, and the Delta. These lands are typically used for livestock grazing. They are capable of producing dryland grain on a two year summer fallow or longer rotation with volunteer hay and pasture. The farmlands in this category are included in the U.S. Natural Resources Conservation Service's Land Capability Classes I, II, III, and IV, and lack some irrigation water.

Grazing Land: Grazing land is land on which the existing vegetation is suitable for the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for this category is 40 acres.

Urban and Built-up Land: This category consists of non-agricultural land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

Other Land: Other land is non-agricultural land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines and borrow pits; and water bodies smaller than 40 acres. Vacant and non-agricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

Water Area: This category consists of bodies of water.

Table 3.2-1 summarizes the farmland and other classifications by the FMMP for the city and the Planning Area. Figure 3.2-1 identifies Important Farmlands and other lands in the city and the Planning Area based on FMMP classifications. As shown in Table 3.2-1, there are 1,700 acres of Important Farmland within the city limits, and an additional 14,757 acres of Important Farmland within the Planning Area.

TABLE 3.2-1: FMMP FARMLAND CLASSIFICATION AND LAND USE CATEGORIES

FARMLAND CLASSIFICATION AND LAND USE CATEGORIES	*CITY (ACRES)*	*PLANNING AREA (ACRES)*	*TOTAL (ACRES)*
Prime Farmland	635.39	8,386.64	9,022.02
Farmland of Statewide Importance	27.85	176.18	204.03
Unique Farmland	0.29	104.08	104.36
Farmland of Local Importance	1,036.50	6,090.68	7,127.17
Important Farmland Subtotal	1,700.03	14,757.58	16,457.58
Grazing Land	161.15	1,657.44	1,818.59
Urban and Built-Up Land	6,226.17	733.18	6,959.35
Water	0	45.33	45.33
Other Land	334.67	1,514.10	1,848.76
Total Area Inventoried	**8,422.02**	**18,707.62**	**27,129.63**

SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION, 2014

Farmland Preservation

The California Land Conservation Act, also known as the Williamson Act, was adopted in 1965 to encourage the preservation of the state's agricultural lands and to prevent their premature conversion to urban uses. The Williamson Act is described in greater detail under the Regulatory Setting section of this chapter.

There are 20 parcels, totaling 1,344.46 acres, within the Brentwood Planning Area that are currently under Williamson Act contract. Of these 1,344.46 acres, one parcel totaling 37.53 acres is located within the city limits.

Figure 3.2-2 depicts the distribution of Williamson Act Contract lands in the city and the Planning Area.

FOREST RESOURCES

Forest land is defined by Public Resources Code Section 12220(g), and includes *"land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits."*

Timber land is defined by Public Resources Code Section 4526, and means *"land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the board on a district basis."*

There are no forest lands or timber lands located within the Brentwood Planning Area.

3.2.2 REGULATORY SETTING

FEDERAL

Farmland Protection Policy Act

The Natural Resources Conservation Service (NRCS), an agency within the U.S. Department of Agriculture, is responsible for implementation of the Farmland Protection Policy Act (FPPA). The purpose of the FPPA is to minimize Federal programs' contribution to the conversion of farmland to non-agricultural uses by ensuring that Federal programs are administered in a manner that is compatible to state, local, and private programs designed to protect farmland. The NRCS provides technical assistance to Federal agencies, state and local governments, tribes, or nonprofit organizations that desire to develop farmland protection programs and policies. The NRCS summarizes FPPA implementation in an annual report to Congress.

Farm and Ranch Lands Protection Program

The NRCS administers the Farm and Ranch Lands Protection Program (FRPP), a voluntary program aimed at keeping productive farmland in agricultural uses. Under the FRPP, the NRCS provides matching funds to state, local, or tribal government entities and nonprofit organizations with

existing farmland protection programs to purchase conservation easements. According to the 1996 Farm Bill, the goal of the program is to protect between 170,000 and 340,000 acres of farmland per year. Participating landowners agree not to convert the land to non-agricultural use and retain all rights to use the property for agriculture. A conservation plan must be developed for all lands enrolled based upon the standards contained in the NRCS Field Office Technical Guide. A minimum of 30 years is required for conservation easements and priority is given to applications with perpetual easements. The NRCS provides up to 50 percent of the fair market value of the easement being conserved (NRCS, 2004). To qualify for a conservation easement, farm or ranch land must meet several criteria. The land must be:

- Prime, Unique, or other productive soil, as defined by NRCS based on factors such as water moisture regimes, available water capacity, developed irrigation water supply, soil temperature range, acid-alkali balance, water table, soil sodium content, potential for flooding, erodibility, permeability rate, rock fragment content, and soil rooting depth;
- Included in a pending offer to be managed by a nonprofit organization, state, tribal, or local farmland protection program;
- Privately owned;
- Placed under a conservation plan;
- Large enough to sustain agricultural production;
- Accessible to markets for the crop that the land produces; and
- Surrounded by parcels of land that can support long-term agricultural production.

STATE

California Department of Conservation

The Department of Conservation (DOC) administers and supports a number of programs, including the Williamson Act, the California Farmland Conservancy Program (CFCP), the Williamson Act Easement Exchange Program (WAEEP), and the Farmland Mapping and Monitoring Program (FMMP). These programs are designed to preserve agricultural land and provide data on conversion of agricultural land to urban use. The DOC has authority for the approval of agreements entered into under the WAEEP. Key DOC tools available for land conservation planning are conservation grants, tax incentives to keep land in agriculture or open space, and farmland mapping and monitoring.

Williamson Act

The California Land Conservation Act, also known as the Williamson Act, was adopted in 1965 to encourage the preservation of the state's agricultural lands and to prevent their premature conversion to urban uses. In order to preserve these uses, the Act established an agricultural preserve contract procedure by which any county or city taxes landowners at a lower rate, using a scale based on the actual use of the land for agricultural purposes, as opposed to its unrestricted

market value. In return, the owners guarantee that these properties remain under agricultural production for a 10-year period. The contract is self-renewing; however, the landowner may notify the county or city at any time of the intent to withdraw the land from its preserve status. There are two means by which the landowner may withdraw the land from its contract preserve status. First, the landowner may seek to cancel the contract. This takes the land out of the contract quickly with a minimal waiting period but the landowner pays a statutory penalty to the State. Second, the landowner may notice a non-renewal or seek a partial non-renewal of the contract. Land withdrawal through the non-renewal process involves a 9 or 10-year period (depending on the timing of the notice) of tax adjustment to full market value before protected open space can be converted to urban uses.

Williamson Act subvention payments to local governments have been suspended since the fiscal year 2009-10 due to the State's fiscal constraints. The Williamson Act contracts between landowners and local governments remain in force, regardless of the availability of subvention payments.

Farmland Security Zones

A Farmland Security Zone is an area created within an agricultural preserve by a board of supervisors (board) or city council (council) upon request by a landowner or group of landowners. An agricultural preserve defines the boundary of an area within which a city or county will enter into contracts with landowners. The boundary is designated by resolution of the board or council having jurisdiction. Agricultural preserves must generally be at least 100 acres in size. Farmland Security Zone contracts offer landowners greater property tax reduction. Land restricted by a Farmland Security Zone contract is valued for property assessment purposes at 65% of its Williamson Act valuation or 65% of its Proposition 13 valuation, whichever is lower.

Forest Practices Rules

The California Department of Forestry and Fire Protection (CalFire) implements the laws that regulate timber harvesting on privately-owned lands. These laws are contained in the Z'berg-Nejedly Forest Practice Act of 1973 which established a set of rules known as the Forest Practice Rules (FPRs) to be applied to forest management related activities (i.e., timber harvests, timberland conversions, fire hazard removal, etc.). They are intended to ensure that timber harvesting is conducted in a manner that will preserve and protect fish, wildlife, forests, and streams. Under the Forest Practice Act, a Timber Harvesting Plan (THP) is submitted to CalFire by the landowner outlining what timber is proposed to be harvested, harvesting method, and the steps that will be taken to prevent damage to the environment. If the landowner intends to convert timberland to non-timberland uses, such as a winery or vineyard, a Timberland Conversion Permit (TCP) is required in addition to the THP. It is CalFire's intent that a THP will not be approved which fails to adopt feasible mitigation measures or alternatives from the range of measures set out or provided for in the Forest Practice Rules, which would substantially lessen or avoid significant adverse environmental impacts resulting from timber harvest activities. THPs are required to be prepared by Registered Professional Foresters (RPFs) who are licensed to prepare these plans (CalFire, 2007). For projects involving TCPs, CalFire acts as lead agency under CEQA, and the county or city acts as a responsible agency.

LOCAL

Right-to-Farm Ordinance

Chapter 8.01 of the Brentwood Municipal Code contains what is commonly called a "Right-to-Farm" ordinance. This chapter is intended to carry out and advance several city agricultural goals and policies set forth in the City's 1993 General Plan. It is the declared purpose of the City to preserve, protect, and encourage ongoing agricultural operations within the city.

The City recognizes that when non-agricultural land uses extend into or are adjacent to agricultural areas, agricultural operations can become the subject of public nuisance complaints. As a result, agricultural operators may be pressured to cease or curtail their operations. Such actions result in premature conversion of agricultural and open space land to the detriment of adjacent agricultural uses and the economic viability of the agricultural industry as a whole.

One purpose of this chapter is to prevent loss of agricultural resources and damage to the local agricultural industry by creating a presumption that proper agricultural operations may not be deemed a public nuisance. An additional purpose is to promote a good neighbor policy by requiring notification to purchasers and users of property near agricultural operations of the inherent inconveniences associated with such operations.

Potential concerns may include, but are not limited to, the noises, odors, dust, chemicals, smoke, and hours of operation that may accompany agricultural operations. Through mandatory disclosures and a grievance procedure, purchasers and users will better understand the impact of living near agricultural operations.

Brentwood Agricultural Preservation Program

Brentwood Municipal Code Chapter 17.730 is the City's Agricultural Preservation Program. The purpose of this chapter is to implement the agricultural preservation policies contained in the Brentwood General Plan with programs designed to support preservation, and provide appropriate programs for lands located within, or adjacent to, the Brentwood Planning Area or its approved Sphere of Influence. This includes mitigating the loss of productive agricultural lands converted for urban uses within the city by permanently protecting agricultural lands planned for agricultural use through the use of agricultural conservation easements or fee title purchase of lands, and permitting a transfer of agricultural credits (TAC) from "agricultural donor parcels" within the TAC target area to "receiver parcels." This also includes the development of programs that create incentives for the continuation of agricultural operations. It is the policy of the City that conservation easements and fee title purchase programs are important for the long term protection of agricultural lands. It is further the policy that additional incentive-based programs and measures should be taken to encourage the continuation and expansion of agricultural operations, including but not limited to, place-based marketing to increase the value of the agricultural crops grown around Brentwood, grants to fund local co-ops and marketing programs, agri-tourism and agri-business development, as well as loan programs that promote the planting of permanent crops and value-added production.

AGRICULTURAL LAND MITIGATION REQUIREMENTS

Brentwood Municipal Code Section 17.730.030 includes the City's Agricultural Land Mitigation Requirements. In order to mitigate and offset the loss of valuable farmland resources, the City requires agricultural land mitigation by any applicant for a subdivision or any other discretionary land use entitlement which will permanently change agricultural land over one acre in size within the City's jurisdiction to any non-agricultural use.

Agricultural land mitigation shall be satisfied by one of the following mechanisms:

> (1) Granting a farmland conservation easement, a farmland deed restriction or other farmland conservation mechanism (including fee title purchase by the City or qualifying entity) to or for the benefit of the City and/or a qualifying entity approved by the City on lands deemed acceptable by the City. The mitigation shall be required for agricultural land that is permanently converted to an urban use, including any portion of the land used for park and recreation purposes, on a one to one land area ratio; or
>
> (2) By payment of an in lieu fee based upon a formula for a one to one land area ratio. The fee shall be established by City Council resolution and shall be reviewed and adjusted periodically to ensure that the fee is adequate to offset the cost of purchasing farmland conservation easements on a one to one ratio. The fee shall be fixed for a 36 month period after enactment of this ordinance. Thereafter the fee may be adjusted annually but may not be increased by more than ten percent during any twelve month period. For non-residential projects, that the City Council determines are important for economic development purposes, some or all of the mitigation requirements of this chapter may be waived.

The in lieu fee, paid to the City, is placed in a trust account and used solely for farmland mitigation purposes. The interest from funds in this account is also used for farmland protection purposes. A limited portion, not to exceed 20 percent of the fees collected, may be used by the City or City–approved qualifying entity for administrative costs associated with establishing, monitoring, and managing farmland conservation easements.

3.2.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on land use and planning if it will:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmlands), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract;
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g));
- Result in the loss of forest land or conversion of forest land to non-forest use; or
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use;

There are no lands within or adjacent to the city or the Planning Area that are Forest Land as defined by Public Resources Code Section 12220(g), or Timber Land as defined by Public Resources Code Section 4526. There are also no parcels that are currently zoned as forest land, timber, or timber production. Therefore, implementation of the proposed General Plan would have no impact on forest land, timber, or timber production and this impact will not be discussed further.

IMPACTS AND MITIGATION MEASURES

Impact 3.2-1: General Plan implementation would result in the conversion of farmlands, including Prime Farmland, Unique Farmland, and Farmland of Statewide Importance (Significant and Unavoidable)

As shown in Table 3.2-1, there are approximately 1,700 acres of Important Farmlands located within the city limits, including 635.39 acres of Prime Farmland, 27.85 acres of Farmland of Statewide Importance, 0.29 acre of Unique Farmland, and 1,036.5 acres of Farmland of Local Importance. As shown on the General Plan Land Use Map (Figure 2.0-3) all of the land within the city limits is planned for urban development in one form or another. Therefore, it is assumed that the agricultural viability of all of the Important Farmlands within the city limits will eventually be lost upon full buildout of the Brentwood General Plan.

The Brentwood General Plan emphasizes and prioritizes infill development as a key strategy to preserve and protect the greatest amount of agricultural land feasible. While all of the Important Farmlands within the city limits may eventually be converted to non-agricultural uses, the General

Plan seeks to preserve and protect significant quantities of agricultural lands outside of the city limits, within the Planning Area.

As shown in Table 3.2-1, there are approximately 14,757 acres of Important Farmland located outside of the city limits, within the Planning Area, including 8,386.64 acres of Prime Farmland, 176.18 acres of Farmland of Statewide Importance, 104.08 acres of Unique Farmland, and 6,090.68 acres of Farmland of Local Importance.

Table 3.2-2 identifies the proposed land use designation for the Important Farmland acres located in the Planning Area. As shown in this table, of the 14,757 acres of Important Farmland located within the Planning Area, 12,534 acres (approximately 85%) are assigned land use designations on the General Plan Land Use Map that would protect the agricultural viability of the land.

As described in greater detail in Section 2.0 of this EIR, the Agricultural Conservation land use designation is designed to protect agricultural lands and agricultural operations. The Permanent Open Space designation identifies lands that are permanently protected from future urban development through the application of conservation easements or other formal mechanisms to ensure that open space uses are continued in perpetuity. The Park designation in the Planning Area applies only to Marsh Creek State Park, and does not include any parcels proposed for development of formal recreational facilities. The Urban Reserve designation serves as a placeholder for future urban development. The land designated as Urban Reserve is located beyond the existing Sphere of Influence (SOI) and outside the Urban Limit Line. Lands designated Urban Reserve shall not be extensively subdivided or developed until it is appropriate to develop the lands with urban levels of residential, commercial, parks and recreation, and public/semi-public uses. It is expected that more specific planning and feasibility studies will be required prior to the development of these areas. Additionally, there are areas of land within the Planning Area that do not have a formal land use designation, which consist primarily of utility easements, rights-of-way, and other non-developable areas that are not subject to urban development.

As shown in Table 3.2-2, approximately 2,223 acres of Important Farmland, including 1,399 acres of Prime Farmland, 57.55 acres of Farmland of Statewide Importance, 14.47 acres of Unique Farmland, and 752.26 acres of Farmland of Local Importance may be converted to urban land uses upon full buildout of the Planning Area.

TABLE 3.2-2: FMMP FARMLAND CLASSIFICATION AND LAND USE DESIGNATIONS IN THE PLANNING AREA

LAND USE DESIGNATION	PRIME FARMLAND (ACRES)	FARMLAND OF STATEWIDE IMPORTANCE (ACRES)	UNIQUE FARMLAND (ACRES)	FARMLAND OF LOCAL IMPORTANCE (ACRES)	TOTAL (ACRES)
Land Use Designations that Preserve Important Farmland					
Agricultural Conservation	7,560.32	118.61	70.41	2,427.15	**10,176.49**
Permanent Open Space	0	0	0	226.62	**226.62**
Parks	214.72	0	18.14	1,783.25	**2,016.11**
Urban Reserve	0	0	0	70.85	**70.85**
No GP Designation (Right of Way, etc)	24.39		1.07	18.64	**19.71**
Subtotal of Important Farmland to be Preserved	***7,799.43***	***118.61***	***89.62***	***4,526.51***	**12,534.17**
Land Use Designations that Support Urban Uses					
Brentwood Boulevard Specific Plan	0	0	0.01	0	**0.01**
Business Park	50.27	0	0	0.02	**50.29**
General Commercial	0	0	0	3.53	**3.53**
Regional Commercial	54.84	0	0	6.58	**61.42**
Public Facilities	0	0	0	253.85	**253.85**
Ranchette Estate	0	0	0	281.05	**281.05**
Residential Very Low Density	0.15	0.01	0	111.57	**111.73**
Residential Low Density	138.74	48.03	2.41	72.95	**262.13**
School	11.99	3.54	0	22.71	**38.24**
Semi-Public Facilities	0	0	0	0	**0**
SPA 1	331.22	5.97	12.05	0	**349.24**
SPA 2	811.89	0	0	0	**811.89**
Subtotal of Important Farmland that may be Converted to Urban Uses	***1,399.1***	***57.55***	***14.47***	***752.26***	**2,223.38**

SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION, 2014, AND DE NOVO PLANNING GROUP, 2014.

The Brentwood General Plan includes a wide range of policies and actions aimed at protecting and preserving agricultural lands within the Planning Area. For example, Policies COS 2-1 through 2-3 encourage and support the preservation and protection of agricultural lands throughout the Planning Area, and support programs that create or establish permanent agricultural areas. These policies are reflected in the General Plan Land Use Map, which designates the vast majority of lands within the Planning Area as Agricultural Conservation. The lands within the Planning Area that are identified for future urban land uses are generally located immediately adjacent to the city limits, and along key transportation corridors near the city limits. As shown on the Land Use Map, the General Plan avoids potential "leap-frog" development by promoting a compact land use plan that prioritizes development within and adjacent to existing urbanized areas.

In addition to the policies and actions listed below, the City implements other programs and regulations aimed at protecting agricultural lands throughout the Planning Area. For example, Brentwood Municipal Code Section 17.730.030 includes the City's Agricultural Land Mitigation Requirements. In order to mitigate and offset the loss of valuable farmland resources, the City requires agricultural land mitigation by any applicant for a subdivision or any other discretionary land use entitlement which will permanently change agricultural land over one acre in size within the City's jurisdiction to any non-agricultural use.

Agricultural land mitigation shall be satisfied by one of the following mechanisms:

> (1) Granting a farmland conservation easement, a farmland deed restriction or other farmland conservation mechanism (including fee title purchase by the City or qualifying entity) to or for the benefit of the City and/or a qualifying entity approved by the City on lands deemed acceptable by the City. The mitigation shall be required for agricultural land that is permanently converted to an urban use, including any portion of the land used for park and recreation purposes, on a one to one land area ratio; or
>
> (2) By payment of an in lieu fee based upon a formula for a one to one land area ratio. The fee shall be established by City Council resolution and shall be reviewed and adjusted periodically to ensure that the fee is adequate to offset the cost of purchasing farmland conservation easements on a one to one ratio. The fee shall be fixed for a 36 month period after enactment of this ordinance. Thereafter the fee may be adjusted annually but may not be increased by more than ten percent during any twelve month period. For non-residential projects, that the City Council determines are important for economic development purposes, some or all of the mitigation requirements of this chapter may be waived.

The in lieu fee, paid to the City, is placed in a trust account and used solely for farmland mitigation purposes. The interest from funds in this account is also used for farmland protection purposes. A limited portion, not to exceed 20 percent of the fees collected, may be used by the City or City–approved qualifying entity for administrative costs associated with establishing, monitoring, and managing farmland conservation easements.

The City also implements a Right-to-Farm ordinance, as described in greater detail in the Regulatory Setting section of this chapter. One purpose of this ordinance is to prevent the loss of agricultural resources and damage to the local agricultural industry by creating a presumption that

proper agricultural operations may not be deemed a public nuisance. An additional purpose of this ordinance is to promote a good neighbor policy by requiring notification to purchasers and users of property near agricultural operations of the inherent inconveniences associated with such operations.

The Brentwood General Plan has taken a proactive approach towards focusing new growth and development towards infill locations, and protecting open space areas and agricultural lands throughout the Planning Area to the greatest extent feasible. The applicable policies and actions that provide protection and preservation of agricultural lands are identified below.

However, as described above, implementation of the Brentwood General Plan may lead to the urbanization of approximately 1,700 acres of Important Farmlands located within the city limits, and 2,223 acres of Important Farmland within the Planning Area. The policies and actions listed below would mitigate this impact to the greatest extent feasible. However, this is considered a **significant and unavoidable** impact.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy COS 2-1: Support and encourage the preservation of agricultural lands throughout Brentwood's Planning Area, particularly in areas to the south and east of the city limits.

Policy COS 2-2: Maintain permanent agricultural lands surrounding the city limits to serve as community separators and continue the agricultural heritage of Brentwood.

Policy COS 2-3: Encourage and support programs that create or establish permanent agricultural areas in Brentwood's Planning Area.

Policy COS 2-4: Participate in regional planning efforts with agencies such as Contra Costa County, the cities of Antioch and Oakley, land trusts, and other regional partners to establish and maintain permanent agricultural areas surrounding Brentwood.

Policy COS 2-5: Work with the Local Agency Formation Commission (LAFCO) on issues of mutual concern including the conservation of agricultural land through consistent use of LAFCO policies, particularly those related to conversion of agricultural lands and establishment of adequate buffers between agricultural and non-agricultural uses, and the designation of a reasonable and logical Sphere of Influence (SOI) boundary for the City.

Policy COS 2-6: Minimize conflicts between agricultural and urban land uses.

Policy COS 2-7: Require the use of buffers such as greenbelts, drainage features, parks, or other improved and maintained features in order to separate residential and other sensitive land uses, such as schools and hospitals, from agricultural lands and agricultural operations.

Policy COS 2-8: Require new development to have structural setbacks that respect agricultural operations.

Policy COS 2-9: Developers shall be responsible for mitigating impacts upon nearby agriculture. Setbacks and buffers shall be provided by the developer and not encroach upon productive agricultural areas.

Policy COS 2-10: Limit incompatible uses (i.e., schools, hospitals, and high density residential) near agriculture.

Policy COS 2-11: Work with agricultural landowners to improve practices that have resulted in adverse impacts to adjacent properties. Such practices include site drainage and flood control measures.

Policy COS 2-12: Promote best management practices in agricultural operations to reduce emissions, conserve energy and water, and utilize alternative energy sources.

Policy COS 2-13: Assist agricultural landowners and farmers with a variety of programs aimed at preserving agricultural lands, increasing opportunities for local sales of agricultural products, and increasing access to local commodities markets.

Policy COS 2-14: Encourage agricultural landowners in Brentwood's Planning Area to participate in Williamson Act contracts and other programs that provide long-term protection of agricultural lands.

Policy COS 2-15: Support the procurement of expanded and additional water rights which provide for contractual supply reliability for agricultural use.

Policy COS 2-16: Encourage small-scale food production, such as community gardens and cooperative neighborhood growing efforts, on parcels within the city limits, provided that the operations do not conflict with existing adjacent urban uses.

Policy COS 2-17: Encourage and support the development of new agricultural related industries featuring alternative energy, utilization of agricultural waste, biofuels, and solar or wind farms.

Policy LU 1-4: Require new development to occur in a logical and orderly manner, focusing growth on infill locations and areas designated for urbanization on the Land Use Map (Figure LU-1), and be subject to the ability to provide urban services, including paying for any needed extension of services.

Policy LU 1-5: Encourage new development to be contiguous to existing development, whenever possible.

Policy LU 2-7: Strongly encourage residential development in the city in a balanced and efficient pattern that reduces sprawl, preserves open space, and creates convenient connections to other land uses.

Policy LU 5-1: Maintain significant areas of permanent agricultural lands and open space surrounding the city limits.

Policy LU 5-2: Protect agricultural land from urban development except where the General Plan Land Use Map has designated the land for urban uses.

ACTIONS

Action COS 2a: Continue to implement Chapter 8.01 (Right to Farm) of the Brentwood Municipal Code in order to protect farming uses from encroaching urban uses and to notify potential homebuyers of nearby agricultural operations.

Action COS 2b: Consider impacts to agricultural lands and agricultural productivity when reviewing new development projects, amendments to the General Plan, and rezoning applications.

Action COS 2c: Amend Title 17 (Zoning) of the Brentwood Municipal Code to include specific agricultural buffer requirements for residential and sensitive land uses (i.e., schools, day care facilities, and medical facilities) that are proposed near existing agricultural lands in order to protect the associated agricultural operations from encroachment by incompatible uses. Buffers shall generally be defined as a physical separation, depending on the land use, and may consist of topographic features, roadways, bike/pedestrian paths, greenbelts, water courses, or similar features. The buffer shall occur on the parcel for which a permit is sought and shall favor protection of the maximum amount of agricultural land.

Action COS 2d: Collaborate with water suppliers and wastewater treatment plant operators to increase the availability of treated or recycled water for agricultural purposes.

Action COS 2e: Work with Contra Costa County to establish and implement consistent policies for agricultural lands in Brentwood's Planning Area that prioritize the preservation of agricultural lands and support ongoing agricultural activities.

Action COS 2f: Continue to implement, and periodically review/update as necessary, Chapter 17.730 (Agricultural Preservation Program) of the Brentwood Municipal Code.

Action COS 2g: Continue to implement the Agricultural Enterprise Implementation Plan to assist local farmers with a variety of programs that facilitate infrastructure improvements, business ventures, and other initiatives to grow the agricultural industry in and around Brentwood.

Action COS 2h: Coordinate with groups such as the Agricultural-Natural Resources Trust of Contra Costa County (ANRT), the Brentwood Agricultural Land Trust (BALT), and Harvest Time in Brentwood in order to fund agricultural easements, programs that protect agricultural lands, and programs that provide marketing assistance and economic support to local farmers.

Action COS 2i: Develop a program to provide additional support for agricultural tourism, u-pick farms, and other agricultural activities that serve as a regional draw to Brentwood and enhance its agricultural heritage.

Action LU 1c: Prioritize the processing of development applications for infill, underutilized, or vacant parcels designated for urban uses over those projects requiring annexation.

Action LU 5a: Continue to designate agricultural lands to the south and east of the city limits as Agricultural Conservation on the Land Use Map.

Action LU 5b: Coordinate with Contra Costa County to encourage and facilitate a variety of agricultural enterprises on lands identified as the Agricultural Enterprise Area in the Brentwood General Plan. Agricultural uses within this area should be flexible in order to maximize the economic vitality of smaller agricultural parcels that may not be suitable for large-scale commercial agricultural operations. Allowed uses should be agricultural in nature and may include, but are not limited to, the following:

1. *Visitor-serving uses that support and are incidental to agricultural production, such as tasting rooms, including sales and promotion of products grown or processed in the region,*

educational activities and tours, incidental sales of items related to local area agricultural products, promotional events, and farm homestays, which allow visitors to visit a farm in the form of a vacation, that support and are secondary and incidental to local agricultural production.

2. *Commercial uses that directly support agricultural operations, including roadside stands, wholesale and retail agricultural sales, and wineries.*

3. *Agricultural-based tourism uses, including u-pick farms, dude ranches, lodging, horseshows, rodeos, crop-based seasonal events, and ancillary restaurants and/or stores.*

4. *Equestrian centers and facilities, including boarding facilities.*

Impact 3.2-2: General Plan implementation may result in conflicts with existing Williamson Act Contracts (Significant and Unavoidable)

There are 20 parcels, totaling 1,344.46 acres, within the Brentwood Planning Area that are currently under Williamson Act contract. Of these 1,344.46 acres, one parcel totaling 37.53 acres is located within the city limits.

Figure 3.2-2 depicts the distribution of Williamson Act Contract lands in the city and the Planning Area.

Adoption of the proposed General Plan would not directly result in the construction of any development projects or directly lead to a change of use on any parcel within the Planning Area. Parcels within the city limits and the Planning Area that are currently used for agricultural purposes, including parcels under a Williamson Act Contract, may continue to be used for agricultural purposes following adoption of the General Plan, even if the General Plan Land Use Map assigns an urban land use designation to the parcel. However, there are parcels within the city and the Planning Area that are currently under Williamson Act Contract which have been assigned an urban land use designation by the General Plan Land Use Map, which may lead to the urbanization of these parcels, and the cessation of agricultural operations, during the life of the General Plan.

Within the city limits, the 37.53-acre parcel under a Williamson Act Contract, which is shown as Contract Number 3-74 on Figure 3.2-2, is designated Residential-Very Low Density by the General Plan Land Use Map. This land use designation conflicts with the Williamson Act Contract on this parcel.

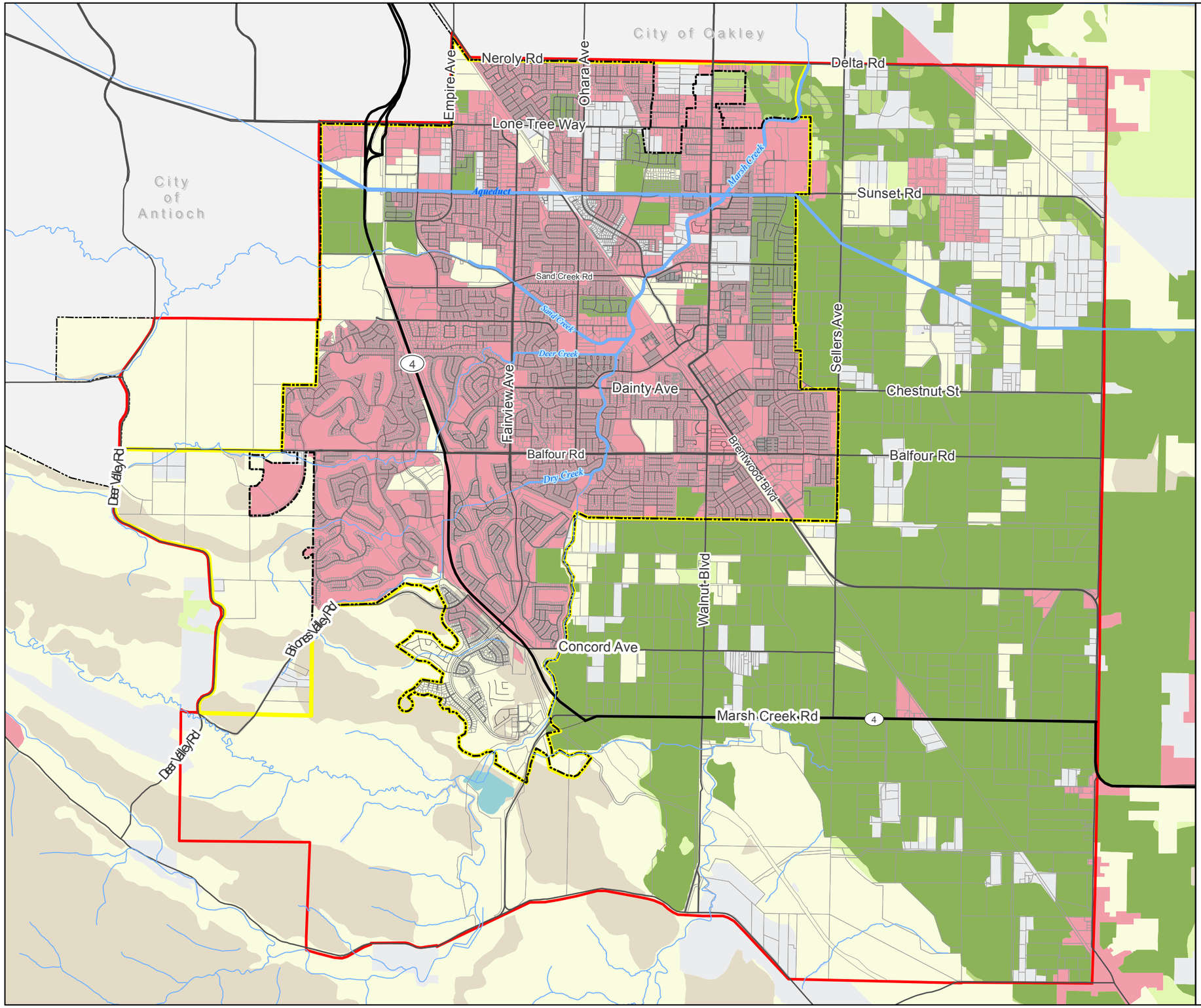
Within the Planning Area, nearly all of the parcels under a Williamson Act Contract are designated Agricultural Conservation on the General Plan Land Use Map. The one exception is the southwestern corner of Contract Number 2-85, as shown on Figure 3.2-2. Approximately seven acres of this Williamson Act Contract land is designated Regional Commercial.

Of the 1,344 acres of land under Williamson Act Contract in the Brentwood Planning Area, 1,300 acres (96.7%) are designated Agricultural Conservation, which would not conflict with the agricultural zoning or Williamson Act Contract for these parcels.

As described in greater detail under Impact 3.2-1 above, the Brentwood General Plan includes a comprehensive set of policies and actions aimed at protecting, enhancing, and preserving agricultural lands and agricultural resources throughout the Planning Area. However, implementation of the General Plan would assign urban land uses to approximately 43.5 acres of land under a Williamson Act Contract. This is considered a **significant and unavoidable** impact. The policies and actions listed under Impact 3.2-1 would reduce this impact to the greatest extent feasible, but not to a less than significant level. There is no additional feasible mitigation available.

BRENTWOOD GENERAL PLAN UPDATE

Figure 3.2-1: Important Farmlands



Category

- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Grazing Land
- Farmland of Local Importance
- Other Land
- Urban and Built-Up Land
- Water Area

Planning Areas

- Brentwood City Limits
- Brentwood Sphere of Influence
- Brentwood Planning Area

0 0.5 1
Miles

Data sources: California Department of Conservation, Farmland Mapping and Monitoring Program, Contra Costa County 2010; City of Brentwood GIS; Contra Costa County GIS. Map date: March 3, 2014.

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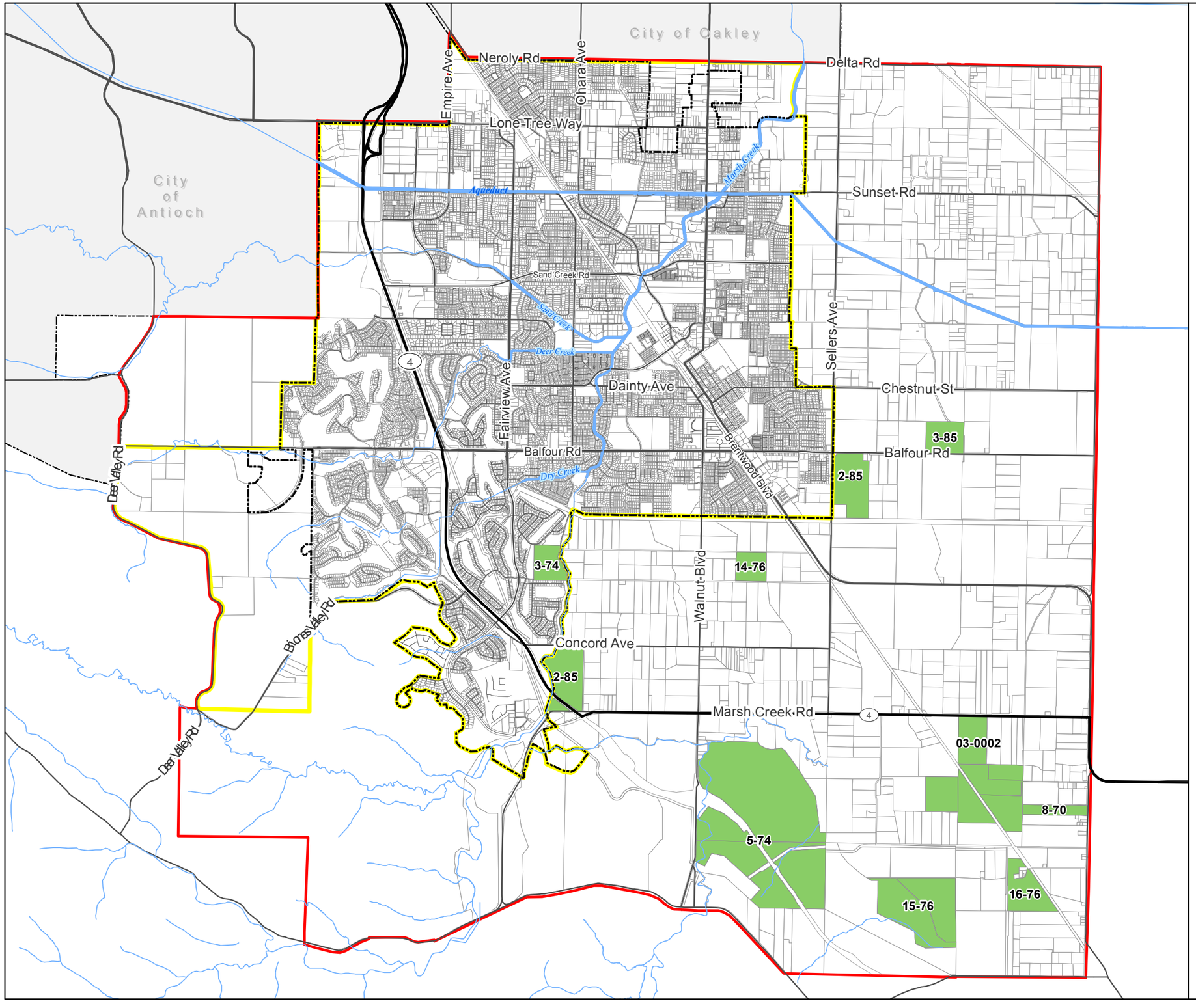
BRENTWOOD GENERAL PLAN UPDATE

Figure 3.2-2: Williamson Act Lands



Williamson Act Mixed Enrollment Agricultural Land
Labeled by Contract Number

Planning Areas

- Brentwood City Limits
- Brentwood Planning Area
- Brentwood Sphere of Influence

0 0.5 1
Miles

Data sources: California Department of Conservation, Division of Land Resource Protection, 2013; Contra Costa County Department of Conservation and Development: 2012 Agricultural Preserves Map; City of Brentwood GIS; Contra Costa County GIS.
Map date: March 4, 2014.

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This section describes the regional air quality, current attainment status of the air basin, local sensitive receptors, emission sources, and impacts that are likely to result from project implementation.

3.3.1 EXISTING SETTING

SAN FRANCISCO BAY AREA AIR BASIN

Brentwood is located within the San Francisco Bay Area Air Basin (SFBAAB), which 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. Air quality in this area is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions. These factors along with applicable regulations are discussed below.

Climate, Topography, and Air Pollution Potential

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns.

The climate is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high pressure cell is centered over the northeastern portion of the Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold water band resulting in condensation and the presence of fog and stratus clouds along the Northern California coast.

In the winter, the Pacific high-pressure cell weakens and shifts southward resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

HIGH PRESSURE CELL

During the summer, the large-scale meteorological condition that dominates the West Coast is a semi-permanent high pressure cell centered over the northeastern portion of the Pacific Ocean. This high pressure cell keeps storms from affecting the California coast. Hence, the SFBAAB experiences little precipitation in the summer months. Winds tend to blow on shore out of the north/northwest.

The steady northwesterly flow induces upwelling of cold water from below. This upwelling produces a band of cold water off the California coast. When air approaches the California coast, already cool and moisture-laden from its long journey over the Pacific, it is further cooled as it crosses this bank of cold water. This cooling often produces condensation resulting in a high incidence of fog and stratus clouds along the Northern California coast in the summer.

Generally in the winter, the Pacific high pressure cell weakens and shifts southward, winds tend to flow offshore, upwelling ceases, and storms occur. During the winter rainy periods, inversions (layers of warmer air over colder air; see below) are weak or nonexistent, winds are usually moderate, and air pollution potential is low. The Pacific high pressure cell does periodically become dominant, bringing strong inversions, light winds, and high pollution potential.

TOPOGRAPHY

The topography of the SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays. This complex terrain, especially the higher elevations, distorts the normal wind flow patterns in the SFBAAB. The greatest distortion occurs when low-level inversions are present and the air beneath the inversion flows independently of air above the inversion, a condition that is common in the summer time.

The only major break in California's Coast Range occurs in the SFBAAB. Here the Coast Range splits into western and eastern ranges. Between the two ranges lies San Francisco Bay. The gap in the western coast range is known as the Golden Gate, and the gap in the eastern coast range is the Carquinez Strait. These gaps allow air to pass into and out of the SFBAAB and the Central Valley.

WIND PATTERNS

During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San Jose when it meets the East Bay hills.

Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate, or the San Bruno gap. For example, the average wind speed at San Francisco International Airport in July is about 17 knots (from 3 p.m. to 4 p.m.), compared with only 7 knots at San Jose and less than 6 knots at the Farallon Islands.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon. As the day progresses, the sea breeze layer deepens and increases in velocity while spreading inland. The depth of the sea breeze depends in large part upon the height and strength of the inversion. If the inversion is low and strong, and hence stable, the flow of the sea breeze will be inhibited and stagnant conditions are likely to result.

In the winter, the SFBAAB frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the SFBAAB.

TEMPERATURE

Summertime temperatures in the SFBAAB are determined in large part by the effect of differential heating between land and water surfaces. Because land tends to heat up and cool off more quickly than water, a large-scale gradient (differential) in temperature is often created between the coast and the Central Valley, and small-scale local gradients are often produced along the shorelines of the ocean and bays. The temperature gradient near the ocean is also exaggerated, especially in summer, because of the upwelling of cold ocean bottom water along the coast. On summer afternoons the temperatures at the coast can be 35ºF cooler than temperatures 15 to 20 miles inland. At night this contrast usually decreases to less than 10º.

In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large.

PRECIPITATION

The SFBAAB is characterized by moderately wet winters and dry summers. Winter rains account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the SFBAAB to another even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys.

During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing are usually high, and thus pollution levels tend to be low. However, frequent dry periods do occur during the winter where mixing and ventilation are low and pollutant levels build up.

AIR POLLUTION POTENTIAL

The potential for high pollutant concentrations developing at a given location depends upon the quantity of pollutants emitted into the atmosphere in the surrounding area or upwind, and the ability of the atmosphere to disperse the contaminated air. The topographic and climatological factors discussed above influence the atmospheric pollution potential of an area. Atmospheric pollution potential, as the term is used here, is independent of the location of emission sources and is instead a function of factors described below.

Wind Circulation

Low wind speed contributes to the buildup of air pollution because it allows more pollutants to be emitted into the air mass per unit of time. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night. These are also periods when air pollutant emissions from some sources are at their peak, namely, commute traffic (early morning) and wood burning appliances (nighttime). The problem can be compounded in valleys, when weak flows carry the pollutants upvalley during the day, and cold air drainage flows move the air mass downvalley at night. Such restricted movement of trapped air provides little opportunity for ventilation and leads to buildup of pollutants to potentially unhealthful levels.

Inversions

An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth (i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground). The highest air pollutant concentrations in the SFBAAB generally occur during inversions.

There are two types of inversions that occur regularly in the SFBAAB. One is more common in the summer and fall, while the other is most common during the winter. The frequent occurrence of elevated temperature inversions in summer and fall months acts to cap the mixing depth, limiting the depth of air available for dilution. Elevated inversions are caused by subsiding air from the subtropical high pressure zone, and from the cool marine air layer that is drawn into the SFBAAB by the heated low pressure region in the Central Valley.

The inversions typical of winter, called radiation inversions, are formed as heat quickly radiates from the earth's surface after sunset, causing the air in contact with it to rapidly cool. Radiation inversions are strongest on clear, low-wind, cold winter nights, allowing the build-up of such pollutants as carbon monoxide and particulate matter. When wind speeds are low, there is little mechanical turbulence to mix the air, resulting in a layer of warm air over a layer of cooler air next to the ground. Mixing depths under these conditions can be as shallow as 50 to 100 meters, particularly in rural areas. Urban areas usually have deeper minimum mixing layers because of heat island effects and increased surface roughness. During radiation inversions downwind transport is slow, the mixing depths are shallow, and turbulence is minimal, all factors which contribute to ozone formation.

Although each type of inversion is most common during a specific season, either inversion mechanism can occur at any time of the year. Sometimes both occur simultaneously. Moreover, the characteristics of an inversion often change throughout the course of a day. The terrain of the SFBAAB also induces significant variations among subregions.

Solar Radiation

The frequency of hot, sunny days during the summer months in the SFBAAB is another important factor that affects air pollution potential. It is at the higher temperatures that ozone is formed. In the presence of ultraviolet sunlight and warm temperatures, reactive organic gases and oxides of nitrogen react to form secondary photochemical pollutants, including ozone. Because temperatures in many of the SFBAAB inland valleys are so much higher than near the coast, the inland areas are especially prone to photochemical air pollution.

In late fall and winter, solar angles are low, resulting in insufficient ultraviolet light and warming of the atmosphere to drive the photochemical reactions. Ozone concentrations do not reach significant levels in the SFBAAB during these seasons.

Sheltered Terrain

The hills and mountains in the SFBAAB contribute to the high pollution potential of some areas. During the day, or at night during windy conditions, areas in the lee sides of mountains are sheltered from the prevailing winds, thereby reducing turbulence and downwind transport. At

night, when wind speeds are low, the upper atmospheric layers are often decoupled from the surface layers during radiation conditions. If elevated terrain is present, it will tend to block pollutant transport in that direction. Elevated terrain also can create a recirculation pattern by inducing upvalley air flows during the day and reverse downvalley flows during the night, allowing little inflow of fresh air.

The areas having the highest air pollution potential tend to be those that experience the highest temperatures in the summer and the lowest temperatures in the winter. The coastal areas are exposed to the prevailing marine air, creating cooler temperatures in the summer, warmer temperatures in winter, and stratus clouds all year. The inland valleys are sheltered from the marine air and experience hotter summers and colder winters. Thus, the topography of the inland valleys creates conditions conducive to high air pollution potential.

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 upon the amount of air pollutant emissions in the surrounding area or 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. These 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.

CARQUINEZ STRAIT CLIMATOLOGICAL SUBREGION

There are 11 climatological subregions within the SFBAAB. Brentwood is located within the Carquinez Strait subregion. The Carquinez Strait runs from Rodeo to Martinez. It is the only sea-level gap between the 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 subregion. 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 SFBAAB 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 90F in the subregion. Mean minimum temperatures in the winter are in the high 30's. Temperature extremes are especially pronounced in sheltered areas farther from the moderating effects of the strait itself (e.g., in Fairfield).

Many industrial facilities with significant air pollutant emissions — e.g., chemical plants and refineries — are located within the Carquinez Strait subregion. 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 at any time. Receptors downwind of these facilities could suffer more long-term exposure to air contaminants than individuals elsewhere. It is important that local governments and other lead agencies maintain buffer 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., Interstate 80), may also be subject to higher local concentrations of carbon monoxide and particulate matter, as well as certain toxic air contaminants such as benzene.

EXISTING AMBIENT AIR QUALITY: CRITERIA AIR POLLUTANTS

The California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (EPA) currently focus on the following air pollutants as indicators of ambient air quality: ozone (O_3), particulate matter (PM), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and lead (Pb). Because these are the most prevalent air pollutants known to be deleterious to human health, they are commonly referred to as "criteria air pollutants." Sources and health effects of the criteria air pollutants are summarized in **Table 3.3-1**.

TABLE 3.3-1 COMMON SOURCES OF HEALTH EFFECTS FOR CRITERIA AIR POLLUTANTS

POLLUTANTS	*SOURCES*	*HEALTH EFFECTS*
Ozone (O3)	Atmospheric reaction of organic gases with nitrogen oxides in sunlight	Aggravation of respiratory and cardiovascular diseases; reduced lung function; increased cough and chest discomfort
Fine Particulate Matter (PM10 and PM2.5)	Stationary combustion of solid fuels; construction activities; industrial processes; atmospheric chemical reactions	Reduced lung function; aggravation of respiratory and cardiovascular diseases; increases in mortality rate; reduced lung function growth in children
Nitrogen Dioxide (NO2)	Motor vehicle exhaust; high temperature stationary combustion; atmospheric reactions	Aggravation of respiratory illness
Carbon Monoxide (CO)	Incomplete combustion of fuels and other carbon-containing substances, such as motor vehicle exhaust; natural events, such as decomposition of organic matter	Aggravation of some heart diseases; reduced tolerance for exercise; impairment of mental function; birth defects; death at high levels of exposure
Sulfur Dioxide (SO2)	Combination of sulfur-containing fossil fuels; smelting of sulfur-bearing metal ore; industrial processes	Aggravation of respiratory diseases; reduced lung function
Lead (Pb)	Contaminated soil	Behavioral and hearing disabilities in children; nervous system impairment

SOURCE: BAY AREA AIR QUALITY MANAGEMENT DISTRICT (2012)

Ozone (O3), or smog, is not emitted directly into the environment, but is formed in the atmosphere by complex chemical reactions between reactive organic gases (ROG) and nitrous oxide (NOX) in the presence of sunlight. Ozone formation is greatest on warm, windless, sunny days. The main sources of NOX and ROG, often referred to as ozone precursors, are combustion processes (including motor vehicle engines), the evaporation of solvents, paints, and fuels, and biogenic sources. Automobiles are the single largest source of ozone precursors in the SFBAAB. Tailpipe emissions of ROG are highest during cold starts, hard acceleration, stop-and-go conditions, and slow speeds. They decline as speeds increase up to about 50 mph, then increase again at high speeds and high engine loads. ROG emissions associated with evaporation of unburned fuel depend on vehicle and ambient temperature cycles. Nitrogen oxide emissions exhibit a different curve; emissions decrease as the vehicle approaches 30 mph and then begin to increase with increasing speeds.

Ozone levels usually build up during the day and peak in the afternoon hours. Short-term exposure can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. Ozone can also damage plants and trees, and materials such as rubber and fabrics.

Particulate Matter (PM) refers to a wide range of solid or liquid particles in the atmosphere, including smoke, dust, aerosols, and metallic oxides. Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM10. PM2.5 includes a subgroup of finer particles that have an aerodynamic diameter of 2.5 micrometers or less. Some particulate matter, such as pollen, is naturally occurring. In the SFBAAB most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Extended exposure to particulate matter can increase the risk of chronic respiratory disease. PM10 is of concern because it bypasses the body's natural filtration system more easily than larger particles, and can lodge deep in the lungs. The EPA and the State of California revised their PM standards several years ago to apply only to these fine particles. PM2.5 poses an increased health risk because the particles can deposit deep in the lungs and contain substances that are particularly harmful to human health. Motor vehicles are currently responsible for about half of particulates in the SFBAAB. Wood burning in fireplaces and stoves is another large source of fine particulates.

Nitrogen Dioxide (NO2) is a reddish-brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO2. Aside from its contribution to ozone formation, nitrogen dioxide can increase the risk of acute and chronic respiratory disease and reduce visibility. NO2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Carbon Monoxide (CO) is an odorless, colorless gas. It is formed by the incomplete combustion of fuels. The single largest source of CO in the SFBAAB is motor vehicles. Emissions are highest during cold starts, hard acceleration, stop-and-go driving, and when a vehicle is moving at low speeds. New findings indicate that CO emissions per mile are lowest at about 45 mph for the average light-duty motor vehicle and begin to increase again at higher speeds. When inhaled at high

concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease or anemia, as well as fetuses. Even healthy people exposed to high CO concentrations can experience headaches, dizziness, fatigue, unconsciousness, and even death.

Sulfur Dioxide (SO2) is a colorless acid gas with a pungent odor. It has potential to damage materials and it can have health effects at high concentrations. It is produced by the combustion of sulfur-containing fuels, such as oil, coal, and diesel. SO2 can irritate lung tissue and increase the risk of acute and chronic respiratory disease.

Lead (Pb) is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the EPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The EPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically.

Ambient Air Quality Standards and Designations

The current Federal and State ambient air quality standards and attainment standards are presented in **Table 3.3-2**.

TABLE 3.3-2 AMBIENT AIR QUALITY STANDARDS AND DESIGNATIONS

POLLUTANT	AVERAGING TIME	CALIFORNIA		NATIONAL STANDARDS[A]		
		STANDARDS[B, C]	ATTAINMENT STATUS[D]	PRIMARY[C,E]	SECONDARY[C,F]	ATTAINMENT STATUS[G]
Ozone	1-hour	0.09 ppm (180 µg/m3)	N (Serious)	–h	Same as Primary Standard	–h
	8-hour	0.070 ppm (137 µg/m3)	–	0.075 ppm (147 µg/m3)		N
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m3)	A	35 ppm (40 mg/m3)	–	U/A
	8-hour	9 ppm (10 mg/m3)		9 ppm (10 mg/m3)		
Nitrogen Dioxide (NO2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)	–	0.053 ppm (100 µg/m3)	Same as Primary Standard	U/A
	1-hour	0.18 ppm (339 µg/m3)	A	–		–
Sulfur Dioxide	Annual Arithmetic	–	–	0.030 ppm (80 µg/m3)	–	A

TABLE 3.3-2 AMBIENT AIR QUALITY STANDARDS AND DESIGNATIONS

POLLUTANT	AVERAGING TIME	CALIFORNIA		NATIONAL STANDARDS [A]		
		STANDARDS [B, C]	ATTAINMENT STATUS [D]	PRIMARY [C,E]	SECONDARY [C,F]	ATTAINMENT STATUS [G]
(SO2)	Mean	–	–	0.030 ppm (80 µg/m3)	–	A
	24-hour	0.04 ppm (105 µg/m3)	A	0.14 ppm (365 µg/m3)	–	
	3-hour	–	–	–	0.5 ppm (1300 µg/m3)	
	1-hour	0.25 ppm (655 µg/m3)	A	–	–	–
Respirable Particulate Matter (PM10)	Annual Arithmetic Mean	20 µg/m3	N	– h	Same as Primary Standard	U
	24-hour	50 µg/m3		150 µg/m3		
Fine Particulate Matter (PM2.5)	Annual Arithmetic Mean	12 µg/m3	N	15 µg/m3	Same as Primary Standard	Nj
	24-hour	–	–	35 µg/m3		
Lead	30-day Average	1.5 µg/m3	A	–	–	–
	Calendar Quarter	–	–	1.5 µg/m3	Same as Primary Standard	–
Sulfates	24-hour	25 µg/m3	A	No National Standards		
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m3)	U			
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m3)	–			
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer — visibility of 10 miles or more (0.07—30 miles or more for Lake Tahoe) because of particles when the relative humidity is less than 70%.	U			

a National standards (other than ozone, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM10 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The PM2.5 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the EPA for further clarification and current Federal policies.

b California standards for ozone, CO (except Lake Tahoe), SO2 (1- and 24-hour), NO2, PM, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

c Concentration expressed first in units in which it was promulgated [i.e., parts per million (ppm) or micrograms per cubic meter (µg/m3)]. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table

TABLE 3.3-2 AMBIENT AIR QUALITY STANDARDS AND DESIGNATIONS

POLLUTANT	AVERAGING TIME	CALIFORNIA		NATIONAL STANDARDS [A]		
		STANDARDS [B, C]	ATTAINMENT STATUS [D]	PRIMARY [C,E]	SECONDARY [C,F]	ATTAINMENT STATUS [G]

refers to ppm by volume, or micromoles of pollutant per mole of gas.

d Unclassified (U): a pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.

Attainment (A): a pollutant is designated attainment if the State standard for that pollutant was not violated at any site in the area during a 3-year period.

Nonattainment (N): a pollutant is designated nonattainment if there was a least one violation of a State standard for that pollutant in the area.

Nonattainment/Transitional (NT): is a subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the standard for that pollutant.

e National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

f National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

g Nonattainment (N): any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.

Attainment (A): any area that meets the national primary or secondary ambient air quality standard for the pollutant.

Unclassifiable (U): any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

h The 1-hour ozone NAAQS was revoked on June 15, 2005 and the annual PM10 NAAQS was revoked in 2006.

i ARB has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for this pollutant.

j U.S EPA lowered the 24-hour PM2.5 standard from 65 µg/m3 to 35 µg/m3 in 2006. EPA issued attainment status designations for the 35 µg/m3standard on December 22, 2008. EPA has designated the Bay Area as nonattainment for the 35 µg/m3 PM2.5 standard. The EPA designation will be effective 90 days after publication of the regulation in the Federal Register.

SOURCE: BAY AREA AIR QUALITY MANAGEMENT DISTRICT (2012)

Monitoring Data

The BAAQMD operates a regional air quality monitoring network that regularly measures the concentrations of the major criteria air pollutants. Air pollutant monitoring data is available at http://www.arb.ca.gov/adam/welcome.html. Air quality conditions in the SFBAAB have improved significantly since the BAAQMD was created in 1955. Ambient concentrations and the number of days on which the region exceeds standards have declined dramatically. Neither Federal nor State ambient air quality standards have been violated in recent decades for nitrogen dioxide, sulfur dioxide, sulfates, lead, hydrogen sulfide, and vinyl chloride.

The closest air quality monitoring site to Brentwood is located in Bethel Island, approximately five miles to the northeast. This monitoring site measures ozone and PM_{10} only. The next closest monitoring site is located in Concord. This site measures ozone, PM_{10}, and $PM_{2.5}$. It is important to note that the Federal ozone 1-hour standard was revoked by the EPA and is no longer applicable for Federal standards. Data obtained from the monitoring sites between 2009 and 2011 is shown in Tables 3.3-3 and 3.3-4.

TABLE 3.3-3: AMBIENT AIR QUALITY MONITORING DATA (BETHEL ISLAND ROAD)

POLLUTANT	CAL. PRIMARY STANDARD	FED. PRIMARY STANDARD	YEAR	DAYS EXCEEDED STATE/FED STANDARD
Ozone (O3) (1-hour)	0.09 ppm for 1 hour	NA	2011 2010 2009	0 / (N/A) 3 / (N/A) 2 / (N/A)
Ozone (O3) (8-hour)	0.07 ppm for 8 hour	0.075 ppm for 8 hour	2011 2010 2009	4 / 2 7 / 4 6 / 3
Particulate Matter (PM10)	50 ug/m3 for 24 hours	150 ug/m3 for 24 hours	2011 2010 2009	0 / 0 6.1 / 0 * / 0
Fine Particulate Matter (PM2.5)	No 24 hour State Standard	35 ug/m3 for 24 hours	Not collected at this site.	

SOURCES: CALIFORNIA AIR RESOURCES BOARD (ADAM) AIR POLLUTION SUMMARIES, 2009-2011.

TABLE 3.3-4: AMBIENT AIR QUALITY MONITORING DATA (CONCORD-2975 TREAT BLVD)

POLLUTANT	CAL. PRIMARY STANDARD	FED. PRIMARY STANDARD	YEAR	DAYS EXCEEDED STATE/FED STANDARD
Ozone (O3) (1-hour)	0.09 ppm for 1 hour	NA	2011 2010 2009	2 / (N/A) 2 / (N/A) 2 / (N/A)
Ozone (O3) (8-hour)	0.07 ppm for 8 hour	0.075 ppm for 8 hour	2011 2010 2009	5 / 2 4 / 1 5 / 2
Particulate Matter (PM_{10})	50 ug/m3 for 24 hours	150 ug/m3 for 24 hours	2011 2010 2009	6.1 / 0 0 / 0 0 / 0
Particulate Matter ($PM_{2.5}$)	No 24 hour State Standard	35 ug/m3 for 24 hours	2011 2010 2009	(N/A) / 2.1 (N/A) / 1 (N/A) / 1

SOURCES: CALIFORNIA AIR RESOURCES BOARD (ADAM) AIR POLLUTION SUMMARIES, 2009-2011.

NOTES:

PPM = PARTS PER MILLION.

UG/M3 = MICRONS PER CUBIC METER.

NA= NOT APPLICABLE

** = THERE WAS INSUFFICIENT (OR NO) DATA AVAILABLE TO DETERMINE THE VALUE*

Emissions Inventory

The BAAQMD estimates emissions of criteria air pollutants from approximately 900 source categories. The estimates are based on BAAQMD permit information for stationary sources (e.g., manufacturing industries, refineries, and dry-cleaning operations), plus more generalized estimates for area sources (e.g., space heating, landscaping activities, and use of consumer products) and mobile sources (e.g., trains, ships and planes, as well as on-road and off-road motor vehicles). BAAQMD emissions inventory data is available at http://www.arb.ca.gov/app/emsinv/emssumcat.php. Table 3.3-5 presents the 2010 estimated annual emissions in Contra Costa County.

TABLE 3.3-5 2010 ESTIMATED ANNUAL AVERAGE EMISSIONS (CONTRA COSTA COUNTY)								
STATIONARY SOURCES	*TOG*	*ROG*	*CO*	*NOX*	*SOX*	*PM*	*PM_{10}*	*$PM_{2.5}$*
Fuel Combustion	4.9	1.8	13.7	18.7	10.1	3.1	3	3
Waste Disposal	49.9	1.1	0.1	0.2	0	0	0	0
Cleaning and Surface Coatings	4.1	3.3	0	0	-	-	-	-
Petroleum Production and Marketing	39.9	11.1	0.2	0.6	8.8	1.1	0.7	0.6
Industrial Processes	3.6	3	1.3	2.4	7.4	2.5	1.7	1.1
Total Stationary Sources	**102.4**	**20.3**	**15.3**	**21.8**	**26.3**	**6.8**	**5.5**	**4.7**
AREAWIDE SOURCES	*TOG*	*ROG*	*CO*	*NOX*	*SOX*	*PM*	*PM_{10}*	*$PM_{2.5}$*
Solvent Evaporation	11.6	10.3	-	-	-	-	-	-
Miscellaneous Processes	15.8	3.4	43.5	2.8	0.1	50.4	27.4	9.7
Total Areawide Sources	**27.4**	**13.7**	**43.5**	**2.8**	**0.1**	**50.4**	**27.4**	**9.7**
MOBILE SOURCES	*TOG*	*ROG*	*CO*	*NOX*	*SOX*	*PM*	*PM_{10}*	*$PM_{2.5}$*
On-road Motor Vehicles	16	14.6	141.5	26.1	0.1	1.5	1.5	1
Other Mobile Sources	10.8	9.9	65.9	25.4	8.2	1.8	1.8	1.6
Total Mobile Sources	26.8	24.6	207.4	51.5	8.4	3.4	3.3	2.6
TOTAL FOR BAY AREA AQMD	**156.6**	**58.6**	**266.2**	**76.1**	**34.8**	**60.5**	**36.2**	**17**

SOURCE: CALIFORNIA AIR RESOURCES BOARD ALMANAC EMISSION PROJECTION DATA (PUBLISHED IN 2009) 2010 ESTIMATED ANNUAL AVERAGE EMISSIONS HTTP://WWW.ARB.CA.GOV/APP/EMSINV/EMSEIC1_QUERY.PHP (ACCESSED 2/2013)

EXISTING AMBIENT AIR QUALITY: 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. 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.

It is important to understand that TACs are not considered criteria air pollutants and thus are not specifically addressed through the setting of ambient air quality standards. Instead, the EPA and CARB regulate hazardous air pollutants (HAPs) and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology (MACT and BACT) to limit emissions. These in conjunction with additional rules set forth by the BAAQMD establish the regulatory framework for TACs.

Industrial facilities and mobile sources are significant sources of TACs. The electronics industry, including semiconductor manufacturing, has the potential to contaminate both air and water due to the highly toxic chlorinated solvents commonly used in semiconductor production processes. Sources of TACs go beyond industry. Various 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. Diesel particulate matter has also been identified as a TAC by the CARB. Diesel PM differs from other TACs 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 TACs in the SFBAAB.

EXISTING AMBIENT AIR QUALITY: ODORS AND DUST

Other air quality issues of concern in the SFBAAB include nuisance impacts of odors and dust. Objectionable odors may be associated with a variety of pollutants. Common sources of odors include wastewater treatment plants, landfills, composting facilities, refineries and chemical plants. Similarly, nuisance dust may be generated by a variety of sources including quarries, agriculture, grading and construction. Odors rarely have direct health impacts, but they can be very unpleasant and can lead to anger and concern over possible health effects among the public. Each year the BAAQMD receives thousands of citizen complaints about objectionable odors. Dust emissions can contribute to increased ambient concentrations of PM_{10}, and can also contribute to reduced visibility and soiling of exposed surfaces.

NATURALLY OCCURRING ASBESTOS

The term “asbestos” is used to describe a variety of fibrous minerals that, when airborne, can result in serious human health effects. Naturally occurring asbestos is commonly associated with ultramafic rocks and serpentinite. Ultramafic rocks, such as dunite, peridotite, and pyroxenite are igneous rocks comprised largely of iron-magnesium minerals. As they are intrusive in nature, these rocks often undergo metamorphosis, prior to their being exposed on the Earth’s surface. The metamorphic rock serpentinite is a common product of the alteration process. Naturally occurring asbestos is mapped in Contra Costa County, although it is all located to the west of the Planning Area in mountainous areas. There is no naturally occurring asbestos mapped within Brentwood.

EXISTING EMISSIONS - BRENTWOOD (SUMMER AND WINTER)

The California Emission Estimator Model (CalEEMod)^{TM} (v.2013.2.2) was used to estimate total existing operational emissions in Brentwood. Table 3.3-6 shows the total existing emissions, which include mobile source, area source, and energy emissions of criteria pollutants. The full calculations, inputs, and assumptions are provided in Appendix B.

TABLE 3.3-6: OPERATIONAL EMISSIONS (EXISTING CONDITIONS)

	ROG		NOx		PM_{10}		$PM_{2.5}$	
Category	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Summer (maximum daily lbs/day)								
Area	31,087.86	1,726.54	406.53	17.92	4,997.74	35.11	4,997.58	34.82
Energy	24.39	24.39	212.30	212.30	16.85	16.85	16.85	16.85
Mobile	2,723.91	2,723.91	4,535.30	4,535.30	2,459.19	2,459.19	697.54	697.54
Total	33,836.16	4,474.85	5,154.14	4,765.53	7,473.78	2,511.15	5,711.97	749.22
Winter (maximum lbs/day)								
Area	31,087.86	1,726.54	406.53	17.92	4,997.74	35.11	4,997.58	34.82
Energy	24.39	24.39	212.30	212.30	16.85	16.85	16.85	16.85
Mobile	2,786.40	2,786.40	5,080.46	5,080.46	2,459.84	2,459.84	698.14	698.14
Total	33,898.65	4,537.34	5,699.30	5,310.69	7,474.43	2,511.80	5,712.57	749.82

SOURCES: CALEEMOD (V.2013.2.2)

BUILDOUT EMISSIONS - BRENTWOOD (SUMMER AND WINTER)

The California Emission Estimator Model (CalEEMod)™ (v.2013.2.2) was used to estimate total operational emissions from General Plan build out. Table 3.3-7 shows the emissions, which include mobile source, area source, and energy emissions of criteria pollutants that would result from operations of development under the General Plan build out within the city limits. Table 3.3-8 shows the emissions, which include mobile source, area source, and energy emissions of criteria pollutants that would result from operations of development under the General Plan build out within the Planning Area. The full calculations, inputs, and assumptions are provided in Appendix B. The project-level threshold of significance is not applicable to this plan-level analysis. The total emissions are presented below for informational purposes.

TABLE 3.3-7: OPERATIONAL EMISSIONS (CITY LIMITS)

	ROG		NOx		PM_{10}		$PM_{2.5}$	
Category	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Summer (maximum daily lbs/day)								
Area	10,825.97	635.92	145.63	10.00	1,746.83	17.50	1,746.74	17.36
Energy	10.4847	10.48	91.74	91.74	7.24	7.24	7.24	7.24
Mobile	1,604.15	1,604.15	2,881.44	2,881.44	1,606.03	1,606.03	455.21	455.21
Total	12,440.6	2,250.56	3,118.82	2,983.19	3,360.10	1,630.77	2,209.19	479.82
% Reduction	--	81.91	--	4.35	--	51.47	--	78.28
Winter (maximum lbs/day)								
Area	10,825.97	635.92	91.74	10.00	1,746.83	17.50	1,746.74	17.36
Energy	10.48	10.48	3,228.69	91.74	7.24	7.24	7.24	7.24
Mobile	1,639.90	1,639.90	3,466.07	3,228.69	1,606.40	1,606.40	455.55	455.55
Total	12,476.37	2,286.31	91.74	3,330.44	3,360.47	1,631.14	2,209.53	480.16
% Reduction	--	81.67	--	3.91	--	51.46	--	78.27

SOURCES: CALEEMOD (V.2013.2.2)

TABLE 3.3-8: OPERATIONAL EMISSIONS (PLANNING AREA)								
	ROG		NOx		PM_{10}		$PM_{2.5}$	
Category	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Summer (maximum daily lbs/day)								
Area	17,065.62	884.79	228.57	13.65	2,766.52	24.65	2,766.39	24.46
Energy	15.07	15.07	131.53	131.53	10.41	10.41	10.41	10.41
Mobile	2,152.97	2,152.97	3,865.08	3,865.08	2,153.87	2,153.87	610.49	610.49
Total	19,233.67	3,052.84	4,225.20	4,010.28	4,930.80	2,188.94	3,387.30	645.37
% Reduction	--	84.13	--	5.09	--	55.61	--	80.95
Winter (maximum lbs/day)								
Area	17,065.62	884.79	228.57	13.65	2,766.52	24.65	2,766.39	24.46
Energy	15.07	15.07	131.53	131.53	10.41	10.41	10.41	10.41
Mobile	2,200.97	2,200.97	4,330.87	4,330.87	2,154.36	2,154.36	610.95	610.95
Total	19,281.66	3,100.84	4,690.98	4,476.07	4,931.30	2,189.44	3,387.76	645.83
% Reduction	--	83.92	--	4.58	--	55.60	--	80.94

SOURCES: CALEEMOD (V.2013.2.2)

As shown in the tables above, operational ROG, PM_{10}, and $PM_{2.5}$ emissions can be significantly reduced through the implementation of basic mitigation measures such as the following:

Area Source:

- Natural gas fireplaces/stoves
- Low Volatile Organic Compound architectural coatings (100 g/L)

Energy Source

- Install high efficiency appliances (refrigerator, fans, washers)

Indoor Water Use

- Install low-flow faucets, toilets, showers
- Use water-efficient irrigation systems

Each individual project would require an individual air quality analysis to determine if the project exceeds the BAAQMD thresholds of significance.

3.3.2 REGULATORY SETTING

REGULATORY SETTING

Air quality with respect to criteria air pollutants and toxic air contaminants (TACs) within the San Francisco Bay Area Air Basin (SFBAAB) is regulated by such agencies as the BAAQMD, CARB, and Federal EPA. Each of these agencies develops rules, regulations, policies, and/or goals to attain the goals or directives imposed through legislation. Although the EPA regulations may not be superseded, both State and local regulations may be more stringent.

FEDERAL

Clean Air Act

The Federal Clean Air Act (FCAA) was first signed into law in 1970. In 1977, and again in 1990, the law was substantially amended. The FCAA is the foundation for a national air pollution control effort, and it is composed of the following basic elements: NAAQS for criteria air pollutants, hazardous air pollutant standards, state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

The EPA is responsible for administering the FCAA. The FCAA requires the EPA to set NAAQS for several problem air pollutants based on human health and welfare criteria. Two types of NAAQS were established: primary standards, which protect public health, and secondary standards, which protect the public welfare from non-health-related adverse effects such as visibility reduction.

Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 sought to ensure that all vehicles sold in the U.S. would meet certain fuel economy goals. Through this Act, Congress established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the Act, the National Highway Traffic and Safety Administration, which is part of the U.S. Department of Transportation (USDOT), is responsible for establishing additional vehicle standards and for revising existing standards.

Since 1990, the fuel economy standard for new passenger cars has been 27.5 mpg. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 mpg. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Compliance with Federal fuel economy standards is determined on the basis of each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the U.S. The Corporate Average Fuel Economy (CAFE) program, which is administered by the EPA, was created to determine vehicle manufacturers' compliance with the fuel economy standards. The EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information generated under the CAFE program, the USDOT is authorized to assess penalties for noncompliance.

Energy Policy Act of 1992 (EPAct)

The Energy Policy Act of 1992 (EPAct) was passed to reduce the country's dependence on foreign petroleum and improve air quality. EPAct includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. EPAct requires certain Federal, State, and local government and private fleets to purchase a percentage of light duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are included in EPAct. Federal tax deductions will be allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs.

Energy Policy Act of 2005

The Energy Policy Act of 2005 was signed into law on August 8, 2005. Generally, the act provides for renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for a clean renewable energy and rural community electrification; and establishes a Federal purchase requirement for renewable energy.

Federal Climate Change Policy

According to the EPA, "the United States government has established a comprehensive policy to address climate change" that includes slowing the growth of emissions; strengthening science, technology, and institutions; and enhancing international cooperation. To implement this policy, "the Federal government is using voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science." The Federal government's goal is to reduce the greenhouse gas (GHG) intensity (a measurement of GHG emissions per unit of economic activity) of the American economy by 18 percent over the 10-year period from 2002 to 2012. In addition, the EPA administers multiple programs that encourage voluntary GHG reductions, including "ENERGY STAR," "Climate Leaders," and Methane Voluntary Programs. However, as of this writing, there are no adopted Federal plans, policies, regulations, or laws directly regulating GHG emissions.

STATE

California Clean Air Act

The California Clean Air Act (CCAA) was first signed into law in 1988. The CCAA provides a comprehensive framework for air quality planning and regulation, and spells out, in statute, the State's air quality goals, planning and regulatory strategies, and performance. CARB is the agency responsible for administering the CCAA. CARB established ambient air quality standards pursuant to the California Health and Safety Code [§39606(b)], which are similar to the Federal standards.

Air Quality Standards

NAAQS are determined by the EPA. The standards include both primary and secondary ambient air quality standards. Primary standards are established with a safety margin. Secondary standards are more stringent than primary standards and are intended to protect public health and welfare. States have the ability to set standards that are more stringent than the Federal standards. As such, California established more stringent ambient air quality standards.

Federal and State ambient air quality standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulates (PM_{10}), and lead. In addition, California has created standards for pollutants that are not covered by Federal standards. The State and Federal primary standards for major pollutants are shown in Table 3.3-1.

Like the EPA, CARB also designates areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA,

areas are designated as nonattainment for a pollutant in air quality data shows that a State standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard, and are not used as a basis for designating areas as nonattainment.

CARB Mobile-Source Regulation

The State is responsible for controlling emissions from the operation of motor vehicles in California. Rather than mandating the use of specific technology or the reliance on a specific fuel, the CARB's motor vehicle standards specify the allowable grams of pollution per mile driven. In other words, the regulations focus on the reductions needed rather than on the manner in which they are achieved. Towards this end, CARB has adopted regulations which required auto manufacturers to phase in less polluting vehicles.

Tanner Air Toxics Act

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

AB 2588 requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures. CARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators). In February 2000, CARB adopted a new public-transit bus-fleet rule and emission standards for new urban buses. These rules and standards provide for (1) more stringent emission standards for some new urban bus engines, beginning with 2002 model year engines; (2) zero-emission bus demonstration and purchase requirements applicable to transit agencies; and (3) reporting requirements under which transit agencies must demonstrate compliance with the urban transit bus fleet rule. Upcoming milestones include the low-sulfur diesel-fuel requirement, and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide.

California Strategy to Reduce Petroleum Dependence (AB 2076)

In response to the requirements of AB 2076 (Chapter 936, Statutes of 2000), the CEC and CARB developed a strategy to reduce petroleum dependence in California. The strategy, *Reducing California's Petroleum Dependence*, was adopted by the CEC and CARB in 2003. The strategy

recommends that California reduce on-road gasoline and diesel fuel demand to 15 percent below 2003 demand levels by 2020, and maintain that level for the foreseeable future; the Governor and Legislature work to establish national fuel economy standards that double the fuel efficiency of new cars, light trucks, and sport utility vehicles (SUVs); and increase the use of non-petroleum fuels to 20 percent of on-road fuel consumption by 2020 and 30 percent by 2030.

Assembly Bill 1493

In response to AB 1493, CARB approved amendments to the California Code of Regulations (CCR) adding GHG emission standards to California's existing motor vehicle emission standards. Amendments to CCR Title 13 Sections 1900 (CCR 13 1900) and 1961 (CCR 13 1961), and adoption of Section 1961.1 (CCR 13 1961.1) require automobile manufacturers to meet fleet average GHG emission limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes beginning with the 2009 model year. Emission limits are further reduced each model year through 2016. For passenger cars and light-duty trucks 3,750 pounds or less loaded vehicle weight (LVW), the 2016 GHG emission limits are approximately 37 percent lower than during the first year of the regulations in 2009. For medium-duty passenger vehicles and light-duty trucks 3,751 LVW to 8,500 pounds gross vehicle weight (GVW), GHG emissions are reduced approximately 24 percent between 2009 and 2016.

CARB requested a waiver of Federal preemption of California's Greenhouse Gas Emissions Standards. The intent of the waiver is to allow California to enact emissions standards to reduce carbon dioxide and other greenhouse gas emissions from automobiles in accordance with the regulation amendments to the CCRs that fulfill the requirements of AB 1493. The EPA granted a waiver to California to implement its greenhouse gas emissions standards for cars.

California Executive Orders S-3-05 and S-20-06, and Assembly Bill 32

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: (1) 2000 levels by 2010; (2) 1990 levels by 2020; and (3) 80% below 1990 levels by 2050.

In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs State agencies to begin implementing AB 32, including the recommendations made by the State's Climate Action Team.

Assembly Bill 1007

Assembly Bill 1007 (Pavley, Chapter 371, Statutes of 2005) directed the CEC to prepare a plan to increase the use of alternative fuels in California. As a result, the CEC prepared the State Alternative Fuels Plan in consultation with Federal, State, and local agencies. The plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state

production. The plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce greenhouse gas emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Bioenergy Action Plan – Executive Order S-06-06

Executive Order S-06-06 establishes targets for the use and production of biofuels and biopower and directs State agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The executive order establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and 75 percent by 2050. The executive order also calls for the State to meet a target for use of biomass electricity.

Governor's Low Carbon Fuel Standard (Executive Order S-01-07)

Executive Order S-01-07 establishes a statewide goal to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 through establishment of a Low Carbon Fuel Standard. The Low Carbon Fuel Standard is incorporated into the State Alternative Fuels Plan and is one of the proposed discrete early action GHG reduction measures identified by CARB pursuant to AB 32.

Climate Action Program at Caltrans

The California Department of Transportation, Business, Transportation, and Housing Agency prepared a Climate Action Program in response to new regulatory directives. The goal of the Climate Action Program is to promote clean and energy efficient transportation, and provide guidance for mainstreaming energy and climate change issues into business operations. The overall approach to lower fuel consumption and CO2 from transportation is twofold: (1) reduce congestion and improve efficiency of transportation systems through smart land use, operational improvements, and Intelligent Transportation Systems; and (2) institutionalize energy efficiency and GHG emission reduction measures and technology into planning, project development, operations, and maintenance of transportation facilities, fleets, buildings, and equipment.

The reasoning underlying the Climate Action Program is the conclusion that "the most effective approach to addressing GHG reduction, in the short-to-medium term, is strong technology policy and market mechanisms to encourage innovations. Rapid development and availability of alternative fuels and vehicles, increased efficiency in new cars and trucks (light and heavy duty), and super clean fuels are the most direct approach to reducing GHG emissions from motor vehicles (emission performance standards and fuel or carbon performance standards)."

Senate Bill 97 (SB 97)

Senate Bill 97 (Chapter 185, 2007) required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the State CEQA Guidelines for addressing greenhouse gas emissions. OPR prepared its recommended amendments to the State CEQA Guidelines to

provide guidance to public agencies regarding the analysis and mitigation of greenhouse gas emissions and the effects of greenhouse gas emissions in draft CEQA documents. The Amendments became effective on March 18, 2010.

Senate Bill 375

SB 375 requires CARB to develop regional greenhouse gas emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035. The 18 MPOs in California will prepare a "sustainable communities strategy" to reduce the amount of greenhouse gas emission in their respective regions and demonstrate the ability for the region to attain CARB's reduction targets. CARB would later determine if each region is on track to meet their reduction targets. In addition, counties and cities would get extra time -- eight years instead of five -- to update housing plans required by the State.

LOCAL

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) attains and maintains air quality conditions in the SFBAAB through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of the BAAQMD includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. The BAAQMD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the FCAA, FCAAA, and the CCAA.

The BAAQMD has regulated TACs since the 1980s. At the local level, air pollution control or management districts may adopt and enforce CARB's control measures. Under BAAQMD Regulation 2-1 (General Permit Requirements), Regulation 2-2 (New Source Review), and Regulation 2-5 (New Source Review), all nonexempt sources that possess the potential to emit TACs are required to obtain permits from BAAQMD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. The BAAQMD limits emissions and public exposure to TACs through a number of programs. The BAAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. In addition, the BAAQMD has adopted Regulation 11 Rules 2 and 14, which address asbestos demolition renovation, manufacturing, and standards for asbestos containing serpentine.

BAAQMD Air Quality Plans

As stated above, the BAAQMD prepares plans to attain ambient air quality standards in the SFBAAB. The BAAQMD prepares ozone attainment plans (OAP) for the national ozone standard

and clean air plans (CAP) for the California standard both in coordination with the Metropolitan Transportation Commission and the Association of Bay Area Governments (ABAG).

With respect to applicable air quality plans, the BAAQMD prepared the 2010 Clean Air Plan to address nonattainment of the national 1-hour ozone standard in the SFBAAB. The purpose of the 2010 Clean Air Plan is to:

1. Update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone;
2. Consider the impacts of ozone control measures on particulate matter (PM), air toxics, and greenhouse gases in a single, integrated plan;
3. Review progress in improving air quality in recent years;
4. Establish emission control measures to be adopted or implemented in the 2009-2012 timeframe; and
5. Address nonattainment of the CAAQS.

BAAQMD CEQA Guidelines

The Bay Area Air Quality Management District (BAAQMD) has adopted California Environmental Quality Act (CEQA) Guidelines to assist lead agencies in evaluating air quality impacts of projects and plans proposed in the San Francisco Bay Area Air Basin (SFBAAB). The Guidelines contain instructions on how to evaluate, measure, and mitigate air quality impacts generated for project-level and plan-level activities. The Guidelines focus on criteria air pollutant, greenhouse gas (GHG), toxic air contaminant, and odor emissions generated from plans or projects. The Guidelines are intended to help lead agencies navigate through the CEQA process. The Guidelines offer step-by-step procedures for a thorough environmental impact analysis of adverse air emissions in the Bay Area.

CALGreen

CALGreen is a set of mandatory green building standards for new construction that went into effect throughout California on January 1, 2011. These building standards apply to all new public and privately-constructed commercial and residential buildings. CALGreen is referred to officially as the California Green Building Standards Code and includes a matrix of mandatory requirements tailored to residential and non-residential building classifications, as well as two sets of voluntary measures (CALGreen Tier 1 and Tier 2) that provide a host of more stringent sustainable building practices and features. Among the key mandatory provisions are requirements that new buildings:

- reduce indoor potable water use by at least 20% below current standards;
- recycle or salvage at least 50% of construction waste;
- utilize low VOC-emitting finish materials and flooring systems;
- install separate water meters tracking non-residential buildings' indoor and outdoor water use;

- utilize moisture-sensing irrigation systems for larger landscape areas;
- receive mandatory inspections by local officials of building energy systems, such as HVAC and mechanical equipment, to verify performance in accordance with specifications in non-residential buildings exceeding 10,000 square feet; and
- earmark parking for fuel-efficient and carpool vehicles.

3.3.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with the Bay Area Air Quality Management District CEQA Guidelines, the proposed project will have a significant impact on the environment associated with air quality if it will:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Cause health risks associated with toxic air contaminants;
- Create objectionable odors; or
- Conflict with regional plans.

(Note: Greenhouse gas emissions are addressed in a separate chapter of this EIR.)

IMPACTS AND MITIGATION MEASURES

Impact 3.3-1: General Plan implementation would not conflict with or obstruct implementation of the applicable air quality plan (Less than Significant)

CEQA requires lead agencies to determine whether a project is consistent with all applicable air quality plans. The BAAQMD's most current plan is the 2010 Clean Air Plan. The BAAQMD CEQA Guidelines recommend that lead agencies consider the following questions relative to this consistency determination:

1. Does the project support the primary goals of the 2010 Clean Air Plan?
2. Does the project include applicable control measures from the 2010 Clean Air Plan?
3. Does the project disrupt or hinder implementation of any 2010 Clean Air Plan control measures?

The primary goals of the 2010 Clean Air Plan are to:

- Attain air quality standards;
- Reduce population exposure and protect public health in the Bay Area; and
- Reduce greenhouse gas emissions and protect the climate.

The 2010 Clean Air Plan's first primary goal is to protect air quality. The 2010 Clean Air Plan contains 55 control measures aimed at reducing air pollution in the Bay Area. Along with the traditional stationary, area, mobile source, and transportation control measures, the 2010 Clean

Air Plan contains a number of new control measures designed to protect the climate and promote mixed use, compact development to reduce vehicle emissions and exposure to pollutants from stationary and mobile sources. The BAAQMD encourages lead agencies to incorporate these Land Use and Local Impact (LUM) measures and Energy and Climate measures (ECM) into proposed project designs and plan elements.

The General Plan Conservation and Open Space Element includes an extensive list of policies and actions that are specifically aimed at improving air quality. These policies and actions, which are presented below, are consistent with the intent of the control measures by promoting a compact urban development form, emphasizing infill development, and ensuring that land use patterns do not expose sensitive receptors to pollutant concentrations.

Additionally, the Circulation Element includes a wide range of policies and actions that would effectively reduce vehicle miles travelled throughout the Planning Area, through the use of complete streets and multi-modal transportation systems. These applicable policies and actions are described in greater detail in Section 3.13 (Transportation and Circulation).

The policies and actions included throughout the General Plan, most specifically within the Conservation and Open Space, Land Use, and Circulation Elements, cover the full breadth of air quality issues as recommended in the 2010 Clean Air Plan. The 2010 Clean Air Plan's second primary goal is to address public health. The 2010 Clean Air Plan addresses public health through identifying control measures to maximize the reduction in population exposure to air pollutants and by including a category titled Land Use and Local Impacts Measures that is intended to address localized impacts of air pollution and to help local jurisdictions to pursue transit-oriented infill development in priority areas.

The 2010 Clean Air Plan's final primary goal of protecting the climate is to reduce greenhouse gases. The General Plan Conservation and Open Space Element includes an extensive list of policies and actions that are specifically aimed at reducing greenhouse gas emissions/climate change. These policies and actions are presented below and discussed in more detail in Section 3.7 (Greenhouse Gases and Climate Change).

If approval of the General Plan would not cause the disruption, delay, or otherwise hinder the implementation of any air quality plan control measure, it may be considered consistent with the 2010 CAP. The General Plan does not cause the disruption, delay, or otherwise hinder the implementation of any air quality plan control measure; therefore, it is consistent with the 2010 CAP. Implementation of the General Plan, with the following policies and actions, would have a **less than significant** impact relative to this topic.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy COS 8-1: Improve air quality through continuing to require a development pattern that focuses growth in and around existing urbanized areas, locating new housing near places of

employment, encouraging alternative modes of transportation, and requiring projects to mitigate significant air quality impacts.

Policy COS 8-2: Minimize exposure of sensitive receptors to concentrations of air pollutant emissions and toxic air contaminants.

Policy COS 8-3: Require discretionary projects involving sensitive receptors such as children, the elderly, or people with illnesses that are proposed within 500 feet of the State Route 4 corridor to include an analysis of mobile source toxic air contaminant health risks. The analysis, if necessary, shall identify feasible mitigation measures to reduce health risks to acceptable levels.

Policy COS 8-4: Encourage new development or significant remodels to install fireplaces, wood stoves, and/or heaters which meet Bay Area Air Quality Management District (BAAQMD) standards.

Policy COS 8-5: Continue to require all construction projects and ground disturbing activities to implement BAAQMD dust control and abatement measures.

Policy COS 8-6: Support the development and implementation of a GHG reduction plan, or Climate Action Plan, that addresses and reduces GHG emissions associated with community operations, including but not limited to, mobile sources (vehicle traffic), energy consumption, and solid waste.

Policy COS 8-7: Coordinate with Contra Costa County and nearby cities to implement regional GHG reduction plans and consolidate efforts to reduce GHGs throughout the county.

Policy COS 8-8: Encourage local businesses and industries to engage in voluntary efforts to reduce GHG emissions and energy consumption.

Policy COS 8-9: Preserve, protect, and enhance, as appropriate, the City's carbon sequestration resources, also referred to as "carbon sinks," to improve air quality and reduce net carbon emissions.

Policy COS 8-10: Encourage public transit, ridesharing and van pooling, shortened and combined motor vehicle trips to work and services, use of bicycles, and walking. Minimize single passenger motor vehicle use.

Policy COS 8-11: Encourage new construction to incorporate passive solar features.

Policy COS 9-1: Require all new public and privately constructed buildings to meet and comply with the most current "green" development standards in the California Code of Regulations (CCR), Title 24.

Policy COS 9-2: Support innovative and green building best management practices including, but not limited to, LEED certification for all new development, and encourage project applicants to exceed the most current "green" development standards in the California Code of Regulations (CCR), Title 24, if feasible.

Policy COS 9-3: Promote the use of alternative energy sources in new development.

Policy COS 9-4: Incorporate innovative green building techniques and best management practices in the site design, construction, and renovation of all public projects.

Policy COS 9-5: Promote water conservation among water users.

Policy COS 9-6: Continue to require new development to incorporate water efficient fixtures into design and construction.

Policy COS 9-7: Promote the use of reclaimed water and other non-potable water sources.

Policy COS 9-8: Encourage large-scale developments and golf course developments to incorporate dual water systems.

Policy COS 9-9: Encourage and support the use of drought-tolerant and regionally native plants in landscaping.

Policy COS 9-10: Ensure that the layout and design of new development and significant remodels encourages the use of transportation modes other than automobiles and trucks.

Policy COS 9-11: Continue the citywide recycling program and actively encourage recycling.

Policy COS 9-12: Continue efforts to reduce solid waste generation throughout the life of the General Plan.

Policy COS 9-13: Continue to encourage and support the use of bicycles as an alternative means of transportation.

ACTIONS

Action COS 8a: Review all new industrial and commercial development projects for potential air quality impacts to residences and other sensitive receptors. The City shall ensure that mitigation measures and best management practices are implemented to reduce significant emissions of criteria pollutants.

Action COS 8b: Review development, infrastructure, and planning projects for consistency with BAAQMD requirements during the CEQA review process. Require project applicants to prepare air quality analyses to address BAAQMD and General Plan requirements, which include analysis and identification of:

1. *Air pollutant emissions associated with the project during construction, project operation, and cumulative conditions.*
2. *Potential exposure of sensitive receptors to toxic air contaminants.*
3. *Significant air quality impacts associated with the project for construction, project operation, and cumulative conditions.*
4. *Mitigation measures to reduce significant impacts to less than significant or the maximum extent feasible where impacts cannot be mitigated to less than significant.*

Action COS 8c: Prepare and adopt a Climate Action Plan. The Climate Action Plan should include the following components:

1. *A baseline greenhouse gas (GHG) emissions inventory*

2. *An adopted GHG emissions reduction target of at least 15% below the business-as-usual projections by 2020*

3. *GHG reductions measures that apply to community wide operations, City operations, and future development projects*

4. *An implementation and monitoring program*

Action COS 8d: Work with Contra Costa County and the Bay Area Air Quality Management District to implement programs aimed at improving regional air quality.

Action COS 8e: Adequate buffers between new industrial uses and sensitive receptors shall be required to avoid potential air quality and nuisance impacts.

Action COS 8f: Provide a conservation page (or similar page) on the City's website that provides links to resource agencies (i.e., CARB, BAAWMD, EPA, etc.) and provides information regarding local and regional conservation and environmental programs, to the extent that the City has readily available information, including methods for pollution prevention such as reduced air pollutant and greenhouse gas emissions through use of alternative forms of transportation (i.e., bicycling, pedestrian, transit), through reducing wood-burning activities using EPA-certified wood-burning devices, etc.

Action COS 9a: Continue to review development projects to ensure that all new public and private development complies with the California Code of Regulations (CCR), Title 24 standards as well as the energy efficiency standards established by the General Plan and the Brentwood Municipal Code.

Action COS 9b: Connect residents and businesses with programs that provide free or low-cost energy efficiency audits and retrofits to existing buildings.

Action COS 9c: Explore amending the Brentwood Municipal Code to incentivize the use of small-scale renewable energy facilities and, where appropriate, to remove impediments to such uses.

Action COS 9d: Develop and provide incentives to developers and businesses that use reclaimed water and other non-potable water for landscaping.

Action COS 9e: Continue to implement Chapter 17.630 of the Brentwood Municipal Code, particularly as it relates to water conservation efforts*.*

Action COS 9f: Provide a conservation page (or similar page) on the City's website that provides links to resource agencies and provides information regarding local and regional conservation and environmental programs, to the extent that the City has readily available information, including recycling guidance for single family residences, businesses, and apartments, opportunities for reuse of materials, a description of how to compost, and a description of methods to reduce water use, such as appropriate reuse and recycling of water, water conservation measures, and xeriscaping.

Action COS 9g: Develop a list of drought-tolerant and native plants appropriate for use in Brentwood and review development projects for adherence to this list.

Impact 3.3-2: General Plan implementation would not cause health risks associated with toxic air contaminants (Less than Significant)

Controlling toxic air contaminants (TACs) became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources. In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment. These are acrolein, benzene, 1,3-butidiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter.

The 2007 EPA rule requires controls that will dramatically decrease Mobile Source Air Toxics (MSAT) emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity (VMT) increases by 145 percent, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050. California maintains stricter standards for clean fuels and emissions compared to the national standards, therefore it is expected that MSAT trends in California will decrease consistent with or more than the U.S. EPA's national projections.

Currently, CARB monitors toxics throughout California from 15 monitoring sites; however, there are no toxic air monitoring sites located in Brentwood. The closest toxic air monitoring site to Brentwood is in Martinez. As air toxics research continues, new tools and techniques will be developed for assessing health outcomes as a result of lifetime air toxics exposure.

Health risks associated with TACs are most pronounced in the areas adjacent to freeway segments. Under the Community Air Risk Evaluation (CARE) program, the BAAQMD has designated certain areas as "Impacted Communities" if the following occur: the areas (1) are close to or within areas of high TAC emissions; (2) have sensitive populations, defined as youth and seniors, with significant TAC exposures; and (3) have significant poverty. Brentwood is not mapped by the BAAQMD as an Impacted Community under the CARE program.

Regardless of the existing health risks associated with TACs, the BAAQMD CEQA Guidelines provide recommendations for all communities to ensure reduced health risks associated with TACs. The General Plan includes policies that are intended to minimize exposure of TACs to sensitive receptors (listed below). These policies and actions are consistent with the BAAQMD recommendations that are intended to reduce health risks associated with TACs. Implementation of the General Plan, including the policies and actions that are intended to mitigate TACs impacts, would ensure that this impact is reduced to a **less than significant** level.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy COS 8-1: Improve air quality through continuing to require a development pattern that focuses growth in and around existing urbanized areas, locating new housing near places of employment, encouraging alternative modes of transportation, and requiring projects to mitigate significant air quality impacts.

Policy COS 8-2: Minimize exposure of sensitive receptors to concentrations of air pollutant emissions and toxic air contaminants.

Policy COS 8-3: Require discretionary projects involving sensitive receptors such as children, the elderly, or people with illnesses that are proposed within 500 feet of the State Route 4 corridor to include an analysis of mobile source toxic air contaminant health risks. The analysis, if necessary, shall identify feasible mitigation measures to reduce health risks to acceptable levels.

ACTIONS

Action COS 8a: Review all new industrial and commercial development projects for potential air quality impacts to residences and other sensitive receptors. The City shall ensure that mitigation measures and best management practices are implemented to reduce significant emissions of criteria pollutants.

Action COS 8b: Review development, infrastructure, and planning projects for consistency with BAAQMD requirements during the CEQA review process. Require project applicants to prepare air quality analyses to address BAAQMD and General Plan requirements, which include analysis and identification of:

1. *Air pollutant emissions associated with the project during construction, project operation, and cumulative conditions.*
2. *Potential exposure of sensitive receptors to toxic air contaminants.*
3. *Significant air quality impacts associated with the project for construction, project operation, and cumulative conditions.*
4. *Mitigation measures to reduce significant impacts to less than significant or the maximum extent feasible where impacts cannot be mitigated to less than significant.*

Action COS 8d: Work with Contra Costa County and the Bay Area Air Quality Management District to implement programs aimed at improving regional air quality.

Action COS 8e: Adequate buffers between new industrial uses and sensitive receptors shall be required to avoid potential air quality and nuisance impacts.

Impact 3.3-3: General Plan implementation would not create objectionable odors (Less than Significant)

Objectionable odors can be generated from certain types of commercial and/or industrial land uses. Common sources of odors include wastewater treatment plants, landfills, composting facilities, refineries, and chemical plants. In general, residential land uses are not associated with odor generation, but they do serve as sensitive receptors. Odors rarely have direct health impacts, but they can be very unpleasant and can lead to anger and concern over possible health effects among the public. Each year the BAAQMD receives thousands of citizen complaints about objectionable odors.

The BAAQMD CEQA Guidelines recommendation for assessing plan level odor impacts is to "identify the location of existing and planned odor sources in the plan area and policies to reduce potential odor impacts in the plan area." The two potential odor sources known to exist in Brentwood are the wastewater treatment plant and the Brentwood Transfer Station, both of which are located on Elkins Way in the northeast part of the city. There are residences within 1,000 feet of the wastewater treatment plant and the transfer station. Additionally, Sunset Park is located immediately south of the wastewater treatment plant and transfer station. The wastewater treatment plant and transfer station have not received significant citizen complaints in the past.

On March 3, 2014 the City opened a new solid waste transfer station, which replaced the original transfer station. The new facility is an enclosed operation, which will reduce the potential for odor generation in the vicinity of the transfer station. The General Plan proposes low-density residential uses in the undeveloped areas to the north and west of the wastewater treatment plant and the transfer station. There are no other existing or planned sources of odors within Brentwood. Future residential development projects located in the vicinity of the wastewater treatment plant and transfer station may be required to implement site-specific design measures in order to reduce the potential exposure of future residents to existing sources of odor. These design measures may include setbacks to locate residences as far from the existing odor sources as possible, and the installation of vegetative screening to reduce the exposure of receptors to existing odor sources. Implementation of the General Plan would have a **less than significant** impact relative to this topic.

Impact 3.3-4: General Plan implementation would not conflict with Regional Plans (Less than Significant)

The *Transportation 2035 Plan* (MTC 2009) is the most recently adopted Regional Transportation Plan prepared by the Metropolitan Transportation Commission (MTC) for the San Francisco Bay Area region. The *Transportation Air Quality Conformity Analysis for the Transportation 2035 Plan* (MTC 2009) was prepared using population forecasts for each local jurisdiction as inputs into the regional travel demand model.

The population of Brentwood is 53,278, which includes 17,877 housing units and an estimated 12,516 jobs (as of January 1, 2013 and estimated by the California Department of Finance). The SOI/Planning Area has an additional 2,333 people, including 790 housing units and 458 jobs. Table 3.3-9 presents the growth projections for new development under the General Plan.

TABLE 3.3-9: COMPARATIVE GROWTH PROJECTIONS, EXISTING GENERAL PLAN LAND USE MAP AND PROPOSED LAND USE MAP

	Population	*Housing Units*	*Jobs*	*Jobs per Housing Unit*
Existing Conditions				
City	53,278	17,877	12,516	0.70
SOI/Planning Area	2,333	790	458	0.58
New Growth: City Limits				
Existing General Plan	35,944	13,955	19,655	1.41
Draft Land Use Map	27,639	9,972	21,232	2.13
New Growth: SOI/Planning Area				
Existing General Plan	28,208	10,665	17,189	1.61
Draft Land Use Map	11,419	3,642	6,276	1.72
Total New Growth: City Limits plus SOI/Planning Area				
Existing General Plan	64,152	24,620	36,844	1.50
Draft Land Use Map	39,058	13,614	27,508	2.02
Buildout Conditions: City				
Existing General Plan	89,222	31,832	32,171	1.01
Draft Land Use Map	80,917	27,849	33,748	1.21
Buildout Conditions: City/SOI/Planning Area				
Existing General Plan	119,763	43,287	49,818	1.15
Draft Land Use Map	92,336	31,491	40,024	1.27

SOURCE: DE NOVO PLANNING GROUP, 2013

As shown in Table 3.3-9, full buildout of the proposed General Plan Land Use Map within the city limits would result in a total population of 80,917, which is lower than the population projection of the existing General Plan Land Use Map. Additionally, full buildout of the proposed General Plan Land Use Map within the Planning Area would result in a total population of 92,336, which is lower

than the population projection of the existing General Plan Land Use Map for that area. The population projections used to prepare the *Transportation 2035 Plan* (MTC 2009) are based on the existing General Plan; therefore, the proposed General Plan would not exceed those population estimates. The proposed General Plan, including its anticipated population growth, does not conflict with the latest adopted and conforming Regional Transportation Plan. This is a **less than significant** impact.

REFERENCES

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This section describes biological resources in the Planning Area from both a qualitative and quantitative perspective. This section provides a background discussion of the geomorphic provinces, bioregions, natural and agricultural communities, regionally important habitat and wildlife, watersheds, and special status species found in the vicinity of Brentwood. This section is organized with an existing setting, regulatory setting, and impact analysis.

KEY TERMS

The following key terms are used throughout this section to describe biological resources and the framework that regulates them:

Hydric Soils. One of the three wetland identification parameters, according to the Federal definition of a wetland, hydric soils have characteristics that indicate they were developed in conditions where soil oxygen is limited by the presence of saturated soil for long periods during the growing season. There are approximately 2,000 named soils in the United States that may occur in wetlands.

Hydrophytic Vegetation. Plant types that typically occur in wetland areas. Nearly 5,000 plant types in the United States may occur in wetlands. Plants are listed in regional publications of the U.S. Fish and Wildlife Service (USFWS) and include such species as cattails, bulrushes, cordgrass, sphagnum moss, bald cypress, willows, mangroves, sedges, rushes, arrowheads, and water plantains.

Sensitive Natural Community. A sensitive natural community is a biological community that is regionally rare, provides important habitat opportunities for wildlife, is structurally complex, or is in other ways of special concern to local, State, or Federal agencies. CEQA identifies the elimination or substantial degradation of such communities as a significant impact. The California Department of Fish and Wildlife (CDFW) tracks sensitive natural communities in the California Natural Diversity Database (CNDDB).

Special-Status Species. Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by Federal, State, or other agencies. Some of these species receive specific protection that is defined by Federal or State endangered species legislation. Others have been designated as "sensitive" on the basis of adopted policies and expertise of State resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. These species are referred to collectively as "special status species" in this report, following a convention that has developed in practice but has no official sanction. For the purposes of this assessment, the term “special status” includes those species that are:

- Federally listed or proposed for listing under the Federal Endangered Species Act (50 CFR 17.11-17.12);
- Candidates for listing under the Federal Endangered Species Act (61 FR 7596-7613);

- State listed or proposed for listing under the California Endangered Species Act (14 CCR 670.5);
- Species listed by the U.S. Fish and Wildlife Service (USFWS) or the CDFW as a species of concern (USFWS), rare (CDFW), or of special concern (CDFW);
- Fully protected animals, as defined by the State of California (California Fish and Game Code Section 3511, 4700, and 5050);
- Species that meet the definition of threatened, endangered, or rare under CEQA (CEQA Guidelines Section 15380);
- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code Section 1900 et seq.); and
- Plants listed by the California Native Plant Society (CNPS) as rare, threatened, or endangered (List 1A and List 2 status plants in Skinner and Pavlik 1994).

Waters of the U.S. The Federal government defines waters of the U.S. as "lakes, rivers, streams, intermittent drainages, mudflats, sandflats, wetlands, sloughs, and wet meadows" [33 C.F.R. §328.3(a)]. Waters of the U.S. exhibit a defined bed and bank and ordinary high water mark (OHWM). The OHWM is defined by the USACE as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" [33 C.F.R. §328.3(e)].

Wetlands. Wetlands are ecologically complex habitats that support a variety of both plant and animal life. The Federal government defines wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R. §328.3(b)]. Wetlands require wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a hydrologic link to waters of the U.S.

3.4.1 ENVIRONMENTAL SETTING

The city of Brentwood is located in eastern Contra Costa County, California approximately 50 miles east of San Francisco and 50 miles southwest of Sacramento. Brentwood is situated in the western portion of the San Joaquin Valley, immediately east of the Diablo Range which forms the eastern boundary of the Coast Ranges.

BIOREGIONS

Brentwood is located within the Bay Area/Delta Bioregion. A brief description of the Bay Area/Delta Bioregion is presented below.

Bay Area/Delta Bioregion: The Bay Area/Delta Bioregion extends from the Pacific Ocean to the Sacramento Valley and San Joaquin Valley bioregions to the northeast and southeast, and a short stretch of the eastern boundary joins the Sierra Bioregion at Amador and Calaveras counties. The bioregion is bounded by the Klamath/North Coast on the north and the Central Coast Bioregion to

the south. The Bay Area/Delta Bioregion is one of the most populous areas of the state, encompassing the San Francisco Bay Area and the Sacramento-San Joaquin River Delta. The water that flows through the Delta supplies two-thirds of California's drinking water, irrigating farmland, and sustaining fish and wildlife and their habitat. The bioregion fans out from San Francisco Bay in a jagged semi-circle that takes in all or part of 12 counties: Alameda, Contra Costa, Marin, Napa, San Francisco, San Joaquin, San Mateo, Santa Clara, Solano, Sonoma, and parts of Sacramento and Yolo. The habitats and vegetation of the Bay Area/Delta Bioregion are as varied as the geography.

CALIFORNIA WILDLIFE HABITAT RELATIONSHIP SYSTEM

The California Wildlife Habitat Relationship (CWHR) habitat classification scheme has been developed to support the CWHR System, a wildlife information system and predictive model for California's regularly-occurring birds, mammals, reptiles, and amphibians. When first published in 1988, the classification scheme had 53 habitats. At present, there are 59 wildlife habitats in the CWHR System: 27 tree, 12 shrub, 6 herbaceous, 4 aquatic, 8 agricultural, 1 developed, and 1 non-vegetated.

According to the California Wildlife Habitat Relationship System there are twelve cover types (wildlife habitat classifications) in the Planning Area out of 59 found in the state. These include: AGS - Annual Grassland, BAR – Barren, CRP – Cropland, DOR - Deciduous Orchard, EOR - Evergreen Orchard, FEW - Fresh Emergent Wetland, LAC – Lacustrine, PAS – Pasture, RIV – Riverine, URB – Urban, VIN – Vineyard, and VRI - Valley Foothill Riparian. Table 3.4-1 identifies the total area by acreage for each cover type (wildlife habitat classification) found in Brentwood. Figure 3.4-1 illustrates the location of each cover type (wildlife habitat classification) within Brentwood. A brief description of each cover type follows.

Developed Cover Types

Cropland includes a variety of sizes, shapes, and growing patterns. Field corn can reach ten feet while strawberries are only a few inches high. Although most crops are planted in rows, alfalfa hay and small grains (rice, barley, and wheat) form dense stands with up to 100 percent canopy closure. Most croplands support annuals, planted in spring and harvested during summer or fall. In many areas, second crops are commonly planted after harvesting the first. Wheat is planted in fall and harvested in late spring or early summer. Overwintering of sugar beets occurs in the Sacramento Valley, with harvesting in spring after the soil dries. Croplands are located on flat to gently rolling terrain. When flat terrain is put into crop production, it usually is leveled to facilitate irrigation. Rolling terrain is either dry farmed or irrigated by sprinklers. Soils often dictate the crops grown. Climate also influences the type of crops grown. Within the Brentwood city limits and sphere of influence there are 154.56 acres of cropland habitat.

TABLE 3.4-1: COVER TYPES - CALIFORNIA WILDLIFE HABITAT RELATIONSHIP SYSTEM			
COVER TYPE	ACRES WITHIN CITY	ACRES WITHIN SOI	TOTAL ACRES
AGS - Annual Grassland	2,346.83	1,115.66	3,462.49
BAR - Barren	177.91	1.24	179.15
CRP - Cropland	63.87	90.69	154.56
DOR - Deciduous Orchard	452.18	50.95	503.13
EOR - Evergreen Orchard	10.67	0.00	10.67
FEW - Fresh Emergent Wetland	14.37	0.00	14.37
LAC - Lacustrine	35.30	0.00	35.30
PAS - Pasture	1,708.75	8.20	1,716.95
RIV - Riverine	35.01	0.00	35.01
URB - Urban	4,558.94	199.49	4,758.43
VIN - Vineyard	64.33	33.21	97.54
VRI - Valley Foothill Riparian	32.06	0.02	32.08
Total	**9,500.22**	**1,499.46**	**10,999.68**

SOURCE: SOURCE: CASIL GIS DATA, 2013, CALIFORNIA WILDLIFE HABITAT RELATIONSHIP SYSTEM, 2013

Deciduous orchards are typically open single species tree dominated habitats. Depending on the tree type and pruning methods they are usually low, bushy trees with an open understory to facilitate harvest. Trees range in height at maturity for many species from 15 to 30 ft, but may be 10 ft or less depending on the species. Crowns usually touch, and are usually in a linear pattern. Spacing between trees is uniform depending on desired spread of mature trees. The understory is usually composed of low-growing grasses, legumes, and other herbaceous plants, but may be managed to prevent understory growth totally or partially, such as along tree rows. Deciduous orchards can be found on flat alluvial soils in the valley floors, in rolling foothill areas, or on relatively steep slopes. Though some deciduous orchards are nonirrigated, most are irrigated. Some flat soils are flood irrigated, but many deciduous orchards are sprinkler irrigated. Large numbers of orchards are irrigated by drip or trickle irrigation systems. Most deciduous orchards are in valley or foothill areas, with a few, such as apples and pears, up to 3,000 feet elevation. Within the Brentwood city limits and sphere of influence there are 503.13 acres of deciduous orchard habitat.

Evergreen orchards are typically open single species tree dominated habitats. Depending on the tree type and pruning methods they are usually low, bushy trees with an open understory to facilitate harvest. Trees range in height at maturity for many species from 15 to 30 ft, but may be 10 ft or less depending on the species. Crowns often do not touch, and are usually in a linear pattern. Spacing between trees is uniform depending on desired spread of mature trees. The understory is usually composed of low-growing grasses, legumes, and other herbaceous plants, but may be managed to prevent understory growth totally or partially, such as along tree rows. Evergreen orchards can be found on flat alluvial soils in the valley floors, in rolling foothill areas, or on relatively steep slopes. All are irrigated. Some flat soils are flood irrigated, but most evergreen

orchards are sprinkler irrigated. Large numbers of orchards are irrigated by drip or trickle irrigation systems. Most evergreen orchards are in valley or foothill areas. Except for olive, most evergreen orchard trees are not very frost tolerant. Within the Brentwood city limits and sphere of influence there are 10.67 acres of evergreen orchard habitat.

Vineyards are composed of single species planted in rows, usually supported on wood and wire trellises. Vines are normally intertwined in the rows but open between rows. Rows under the vines are usually sprayed with herbicides to prevent growth of herbaceous plants. Between rows of vines, grasses and other herbaceous plants may be planted or allowed to grow as a cover crop to control erosion. Vineyards can be found on flat alluvial soils in the valley floors, in rolling foothill areas, or on relatively steep slopes. All are irrigated. Most vineyards are sprinkler irrigated. Large numbers of vineyards are irrigated by drip or trickle irrigation systems. Most vineyards are in valley or foothill areas. Within the Brentwood city limits and sphere of influence there are 97.54 acres of vineyard habitat.

Urban habitats are not limited to any particular physical setting. Three urban categories relevant to wildlife are distinguished: downtown, urban residential, and suburbia. The heavily-developed downtown is usually at the center, followed by concentric zones of urban residential and suburbs. There is a progression outward of decreasing development and increasing vegetative cover. Species richness and diversity is extremely low in the inner cover. The structure of urban vegetation varies, with five types of vegetative structure defined: tree grove, street strip, shade tree/lawn, lawn, and shrub cover. A distinguishing feature of the urban wildlife habitat is the mixture of native and exotic species. Within the Brentwood city limits and sphere of influence there are 4,758.43 acres of urban habitat.

Herbaceous Cover Types

Annual Grassland habitat occurs mostly on flat plains to gently rolling foothills. Climatic conditions are typically Mediterranean, with cool, wet winters and dry, hot summers. The length of the frost-free season averages 250 to 300 days. Annual precipitation is highest in northern California. Within the Brentwood city limits and sphere of influence there are 3,462.49 acres of annual grassland habitat.

Fresh emergent wetland habitats occur on virtually all exposures and slopes, provided a basin or depression is saturated or at least periodically flooded. They are most common on level to gently rolling topography. They are found in various depressions or at the edge of rivers or lakes. Soils are predominantly silt and clay, although coarser sediments and organic material may be intermixed. In some areas organic soils (peat) may constitute the primary growth medium. Climatic conditions are highly variable and range from the extreme summer heat to winter temperatures well below freezing. Within the Brentwood city limits and sphere of influence there are 14.37 acres of fresh emergent wetland habitat.

Pastures are planted on flat and gently rolling terrain. Flat terrain is irrigated by the border and check method of irrigation, except on sandy soils or where water supplies are limited. Pastures established on sandy soils or hills are sprinklered. Hilly lands also use wild flooding; that is, ditches

that follow the grade along ridges and hillsides, where water is released at selected points along the ditch. Climate influences the length of the growing season. For example, pastures at higher elevations or in the north have a shorter growing season. Within the Brentwood city limits and sphere of influence there are 1,716.95 acres of pasture habitat.

Hardwood Woodland Cover Types

Valley-foothill riparian habitats are found in valleys bordered by sloping alluvial fans, slightly dissected terraces, lower foothills, and coastal plains. They are generally associated with low velocity flows, flood plains, and gentle topography. Valleys provide deep alluvial soils and a high water table. The substrate is coarse, gravelly, or rocky soils more or less permanently moist, but probably well aerated. Frost and short periods of freezing occur in winter (200 to 350 frost-free days). This habitat is characterized by hot, dry summers and mild and wet winters. Temperatures range from 75 to 102 F in the summer to 29 to 44 F in the winter. Average precipitation ranges from 6-30 inches, with little or no snow. The growing season is 7 to 11 months. Within the Brentwood city limits and sphere of influence there are 32.08 acres of valley-foothill riparian habitat.

Other Habitats

Barren habitat is defined by the absence of vegetation. Any habitat with <2% total vegetation cover by herbaceous, desert, or nonwildland species and <10% cover by tree or shrub species is defined this way. The physical settings for permanently barren habitat represent extreme environments for vegetation. An extremely hot or cold climate, a near-vertical slope, an impermeable substrate, constant disturbance by either human or natural forces, or a soil either lacking in organic matter or excessively saline can each contribute to a habitat being inhospitable to plants. Within the Brentwood city limits and sphere of influence there are 179.15 acres of barren habitat.

Aquatic Habitats

Riverine habitats can occur in association with many terrestrial habitats. Riverine habitats are found adjacent to many rivers and streams. Riverine habitats are also found contiguous to lacustrine and fresh emergent wetland habitats. This habitat requires intermittent or continually running water generally originating at some elevated source, such as a spring or lake, and flows downward at a rate relative to slope or gradient and the volume of surface runoff or discharge. Velocity generally declines at progressively lower altitudes, and the volume of water increases until the enlarged stream finally becomes sluggish. Over this transition from a rapid, surging stream to a slow, sluggish river, water temperature and turbidity will tend to increase, dissolved oxygen will decrease, and the bottom will change from rocky to muddy. Within the Brentwood city limits and sphere of influence there are 35.01 acres of riverine habitat.

Lacustrine habitats are inland depressions or dammed riverine channels containing standing water. These habitats may occur in association with any terrestrial habitats, Riverine, or Fresh Emergent Wetlands. They may vary from small ponds less than one acre to large areas covering several square miles. Depth can vary from a few inches to hundreds of feet. Typical lacustrine

habitats include permanently flooded lakes and reservoirs, and intermittent lakes and ponds (including vernal pools) so shallow that rooted plants can grow over the bottom. Most permanent lacustrine systems support fish life; intermittent types usually do not. Within the Brentwood city limits and sphere of influence there are 35.30 acres of lacustrine habitat.

SPECIAL-STATUS SPECIES

The following discussion is based on a background search of special-status species that are documented in the California Natural Diversity Database (CNDDB), the California Native Plant Survey (CNPS) Inventory of Rare and Endangered Plants, and the USFWS endangered and threatened species lists. The background search was regional in scope and focused on the documented occurrences within 10 miles of Brentwood.

Special Status Plants

The search revealed documented occurrences of 51 special status plant species (including three non-vascular plants) within 10 miles of Brentwood. Table 3.4-2 provides a list of special-status plant species that are documented within 10 miles of Brentwood, their habitat, and current protective status. Figure 3.4-2 illustrates the special status species located within one mile of Brentwood. Figure 3.4-3 illustrates the special status species located within 10 miles of Brentwood.

TABLE 3.4-2: SPECIAL STATUS PLANTS PRESENT OR POTENTIALLY PRESENT

SPECIES	STATUS	HABITAT
PLANTS		
Amsinckia grandiflora large-flowered fiddleneck	FE; CE;1B	Cismontane Woodland, Valley and Foothill grassland. Annual grassland in various soils. Occurs at elevations between 275-550 meters (M).
Anomobryum julaceum slender silver moss	--;--;2	Broadleaved upland forest, lower montane coniferous forest, north coast coniferous forest. Moss that grows on damp rocks and soil; acidic substrates usually seen on roadcuts. 100-1000M.
Arctostaphylos auriculata Mt. Diablo manzanita	--;--;1B	Chaparral. In canyons and on slopes and sandstone. 120-500M.
Arctostaphylos manzanita ssp. laevigata Contra Costa manzanita	--;--;1B	Chaparral. Rocky slopes, 500-1100M.
Astragalus tener var. tener alkali milk-vetch	--;--;1B	Alkali playa, valley and foothill grassland, vernal pools. Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 1-170M.
Atriplex cordulata Heartscale	--/--/1B	Saline or alkaline areas in chenopod scrub, meadows and seeps, sandy soils in valley and foothill grassland; below 375 m
Atriplex depressa brittlescale	--;--;1B	Chenopod scrub, meadows, playas, valley and foothill grassland, vernal pools. Usually in alkali scalds or alkali clay in meadows or annual grassland; rarely associated w/riparian marshes or vernal pools. 1-320M.
Atriplex joaquiniana	--;--;1B	Chenopod scrub, alkali meadow, valley and foothill grassland.

TABLE 3.4-2: SPECIAL STATUS PLANTS PRESENT OR POTENTIALLY PRESENT

SPECIES	STATUS	HABITAT
San Joaquin spearscale		In seasonal alkali wetlands or alkali sink scrub with distichlis spicata, frankenia, etc. 1-250M.
Blepharizonia plumosa big tarplant	--;--;1B	Valley and foothill grassland. Dry hills and plains in annual grassland. Clay to clay-loam soils; usually on slopes and often in burned areas. 15-455M.
Calochortus pulchellus Mt. Diablo fairy-lantern	--;--;1B	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. On wooded and brushy slopes. 200-800M.
Campanula exigua chaparral harebell	--;--;1B	Chaparral. Rocky sites, usually on serpentine in chaparral. 300-1250M.
Carex comosa Bristly sedge	--/--/2	Coastal prairie, marshes and swamps at lake margins, valley and foothill grassland; below 625 m
Centromadia parryi ssp. Congdonii Congdon's tarplant	--;--;1B	Valley and foothill grassland. Alkaline soils, sometimes described as heavy white clay. 1-230M.
Chloropyron molle ssp. molle soft bird's-beak	FE;CR;1B	Coastal salt marsh with distichlis, slaicornia, frankenia, etc. 0-3M.
Cicuta maculata var. bolanderi Bolander's water-hemlock	--;--;2	Marshes, fresh or brackish water. 0-200M.
Cordylanthus nidularius Mt. Diablo bird's-beak	--;CR;1B	Chaparral. Grassy or rocky areas within serpentine chaparral. 600-800 M.
Cryptantha hooveri Hoover's cryptantha	--;--;1A	Valley and foothill grassland, in coarse sand. 0-150M.
Delphinium californicum ssp. Interius Hospital Canyon larkspur	--;--;1B	Cismontane woodland, chaparral. In wet, boggy meadows, openings in chaparral and in canyons. 225-1060M.
Delphinium recurvatum recurved larkspur	--;--;1B	Chenopod scrub, valley and foothills grassland, cismontane woodland on alkaline soils; often in valley saltbrush or valley chenopod scrub. 3-685M.
Didymodon norrisii Norris' beard moss	--;--;2	Cismontane woodland, lower montane coniferous forest. Moss from seasonally wet sheet drainages on exposed rock slabs or terraces that completely dry in summer.
E*riogonum nudum var. psychicola* Antioch Dunes buckwheat	--;--;1B	Grows on the Antioch Dunes (interior dune system) with lupinus albifrons, gutierrezia californica, and introduced grasses.
Eriogonum truncatum Mt. Diablo buckwheat	--;--;1B	Chaparral, coastal scrub, valley and foothill grassland. Dry, exposed clay or sandy substrates. 3-350 M.
Erodium macrophyllum Round-leaved filaree	--/--/2	Cismontane woodland, valley and foothill grassland on clay soils; 15-1,200 m
Eryngium racemosum Delta button-celery	--;CE;1B	Riparian scrub. Seasonally inundated floodplain on clay. 3-75M.

TABLE 3.4-2: SPECIAL STATUS PLANTS PRESENT OR POTENTIALLY PRESENT

SPECIES	STATUS	HABITAT
Erysimum capitatum var. angustatum Contra Costa wallflower	FE;CE;1B	Inland dunes. Stabilized dunes of sand and clay near Antioch along the San Joaquin River. 3-20M.
Eschscholzia rhombipetala diamond-petaled California poppy	--;--;1B	Valley and foothill grassland. Alkaline, clay slopes and flats. 0-975M.
Fritillaria agrestis stinkbells	--;--;4	Cismontane woodland, chaparral, valley and foothill grassland. Sometimes on serpentine; mostly found in nonnative grassland or in grassy openings in clay soil. 10-1555M.
Helianthella castanea Diablo helianthella	--;--;1B	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Usually in chaparral/oak woodland interface in rocky, azonal soils often in partial shade. 25-1150M.
Hesperolinon breweri Brewer's western flax	--;--;1B	Chaparral, cismontane woodland, valley and foothill grassland. Often in rocky serpentine soil in serpentine chaparral and serpentine grassland. 30-885M.
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	--;--;1B	Marshes and swamps (freshwater). Moist, freshwater soaked river banks and low peat islands in sloughs; known from the Delta watershed. 0-150M.
Lasthenia conjugens Contra Costa goldfields	FE;--;1B	Valley and foothill grassland, vernal pools, cismontane woodland. Extirpated from most of its range; extremely endangered. Vernal pools, swales, low depressions, in open grassy areas. 1-445M.
Lathyrus jepsonii var. jepsonii Delta tule pea	--/--/1B	Freshwater or brackish marsh; 5-330 m
Lilaeopsis masonii Mason's lilaeopsis	--;CR;1B	Freshwater and brackish marshes, riparian scrub. Tidal zones, in muddy or silty soil formed through river deposition or river bank erosion. 0-10M.
Limosella subulata Delta mudwort	--/--/2	Muddy or sandy intertidal flats and marshes, stream banks in riparian scrub, generally at sea level
Madia radiate showy golden madia	--;--;1B	Valley and foothill grassland, cismontane woodland, chenopod scrub. Mostly on adobe clay in grassland or among shrubs. 25-1125M.
Malacothamnus hallii Hall's bush-mallow	--;--;1B	Chaparral. Some populations on serpentine. 10-550M.
Monolopia gracilens woodland woollythreads	--;--;1B	Chaparral, valley and foothill grasslands (serpentine), cismontane woodland, broadleaved upland forests. Grassy sites, in openings; sandy to rocky soils. Often seen on serpentine after burns.
Navarretia nigelliformis ssp. radians shining navarretia	--;--;1B	Cismontane woodland, valley and foothill grassland, vernal pools. Apparently in grassland, and not necessarily in vernal pools. 200-1000M.

TABLE 3.4-2: SPECIAL STATUS PLANTS PRESENT OR POTENTIALLY PRESENT

SPECIES	STATUS	HABITAT
Oenothera deltoides ssp. howellii Antioch Dunes evening-primrose	FE;CE;1B	Remnant river bluffs and sand dunes east of Antioch. 0-30M.
Phacelia phacelioides Mt. Diablo phacelia	--;--;1B	Chaparral, cismontane woodland adjacent to trails on rock outcrops and talus slopes; sometimes on serpentine. 500-1370M.
Potamogeton zosteriformis eel-grass pondweed	--;--;2	Marshes and swamps, ponds, lakes, streams. 0-1860M.
Sanicula saxatilis rock sanicle	--;CR;1B	Broadleaved upland forest, chaparral, valley and foothill grassland. Bedrock outcrops and talus slopes in chaparral or oak woodland habitat. 615-1215M.
Scutellaria galericulata Marsh skullcap	--/--/2	Marshes, meadows and seeps, lower montane coniferous forest; below 2100 m
Scutellaria lateriflora side-flowering skullcap	--;--;2	Meadows and seeps, marshes and swamp. Wet meadows and marshes. In the Delta, often found on logs. 3-500M.
Senecio aphanactis chaparral ragwort	--;--;2	Chaparral, cismontane woodland, coastal scrub. Drying alkaline flats. 15-800 M.
Streptanthus albidus ssp. peramoenus most beautiful jewel-flower	--;--;1B	Chaparral, valley and foothill grassland, cismontane woodland. Serpentine outcrops, on ridges and slopes. 120-730M.
Streptanthus hispidus Mt. Diablo jewel-flower	--;--;1B	Valley and foothill grassland, chaparral. Talus or rocky outcrops. 365-1200 M.
Symphyotrichum lentum Suisun Marsh aster	--;--;1B	Marshes and swamps (brackish and freshwater). Most often seen along sloughs. 0-3M.
Triquetrella californica coastal triquetrella	--;--;1B	Coastal bluff scrub, coastal scrub, valley and foothill grasslands, grows within 30M from the coast in coastal scrub, grasslands and in open gravels on roadsides, hillsides, rocky slopes
Tropidocarpum capparideum caper-fruited tropidocarpum	--;--;1B	Valley and foothill grassland. Alkaline clay. 0-455M.
Viburnum ellipticum oval-leaved viburnum	--;--;2	Chaparral, cismontane woodland, lower montane coniferous forest. 215-1400M.

SOURCE: CDFW CNDDB 2013

NOTES: STATUS IS SHOWN FOR (FEDERAL, STATE, CNPS). (__) INDICATES NO LISTING STATUS.

ABBREVIATIONS:

FE FEDERAL ENDANGERED
FT FEDERAL THREATENED
CE CALIFORNIA ENDANGERED
CT CALIFORNIA THREATENED
CR CALIFORNIA RARE (PROTECTED BY NATIVE PLANT PROTECTION ACT)
1B CNPS - RARE, THREATENED, OR ENDANGERED

2 CNPS - RARE, THREATENED, OR ENDANGERED IN CALIFORNIA, BUT MORE COMMON ELSEWHERE
4 CNPS - PLANTS OF LIMITED DISTRIBUTION - A WATCH LIST

Special Status Animals

The search revealed documented occurrences of 55 special status animal species within 10 miles of Brentwood. This includes: three amphibians, fourteen birds, two fish, twenty-one invertebrates, nine mammals, and six reptiles. Table 3.4-3 provides a list of the special status animal species that are documented within 10 miles of Brentwood, their habitat, and current protective status. Figure 3.4-3 illustrates the location of each documented occurrence.

TABLE 3.4-3: SPECIAL STATUS ANIMALS PRESENT OR POTENTIALLY PRESENT

SPECIES	STATUS	HABITAT
AMPHIBIANS		
Ambystoma californiense California tiger salamander	FT/CT (CSC)	Need underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water sources for breeding.
Rana aurora draytoni California red-legged frog	FT/CSC	Permanent and semi-permanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation. May estivate in rodent burrows or cracks during dry periods.
Rana boylii foothill yellow-legged frog	FSC/CSC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying. Need at least 15 weeks to attain metamorphosis.
BIRDS		
Agelaius tricolor tricolored blackbird	FSC/CSC	Highly colonial species, most numerous in central valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.
Aquila chrysaetos Golden eagle	--/CP	Foothills and mountains throughout California. Uncommon non-breeding visitor to lowlands such as the Central Valley. Nest on cliffs and escarpments or in tall trees overlooking open country. Forages in annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals
Ardea herodias (rookery) Great blue heron	--/--	Found throughout much of North America and into Central and South America. Common throughout California. Rookeries occur in tall trees near a variety of wetland habitat types. Isolated areas that discourage predation and human disturbance are preferred.
Athene cuniculari Burrowing owl	FSC/CSC	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.

TABLE 3.4-3: SPECIAL STATUS ANIMALS PRESENT OR POTENTIALLY PRESENT		
SPECIES	STATUS	HABITAT
Buteo regalis Ferruginous hawk	MBTA /CP	Does not nest in California; winter visitor along the coast from Sonoma County to San Diego County, east-ward to the Sierra Nevada foothills and south-eastern deserts, the Inyo-White Mountains, the plains east of the Cascade Range, and Siskiyou County. Open terrain in plains and foothills where ground squirrels and other prey are available.
Buteo swainsoni Swainson's hawk	MBTA/CT	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County. Nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields.
Elanus leucurus white-tailed kite	MBTA/CP	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated dense-topped trees for nesting and perching.
Eremophila alpestris actia California horned lark	--/CSC	Found throughout much of the State, less common in mountainous areas of the north coast and in coniferous or chaparral habitats. Common to abundant resident in a variety of open habitats, usually where large trees and shrubs are absent. Grasslands and deserts to dwarf shrub habitats above tree line.
Falco mexicanus Prairie falcon	--/CP	Permanent resident in the south Coast, Transverse, Peninsular, and northern Cascade Ranges, the southeastern deserts, Inyo-White Mountains, foothills surrounding the Central Valley, and in the Sierra Nevada in Modoc, Lassen, and Plumas Counties. Winters in the Central Valley, along the coast from Santa Barbara County to San Diego County, and in Marin, Sonoma, Humboldt, Del Norte, and Inyo Counties. Nests on cliffs or escarpments, usually overlooking dry, open terrain or uplands
Geothlypis trichas sinuosa saltmarsh common yellowthroat	FSC/CSC	Resident of the San Francisco Bay region, in fresh and saltwater marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.
Lanius ludovicianus Loggerhead shrike	MBTA/CSC	Resident and winter visitor in lowlands and foothills throughout California. Rare on coastal slope north of Mendocino County, occurring only in winter. Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.
Laterallus jamaicensis coturniculus California black rail	--/CT	Tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations
Melospiza melodia maxillaris Suisun song sparrow	--/CSC	Resident of brackish water marshes surrounding Suisun Bay. Inhabits cattails, tules and other sedges, and salicornia; also known to frequent tangles bordering sloughs.

TABLE 3.4-3: SPECIAL STATUS ANIMALS PRESENT OR POTENTIALLY PRESENT		
SPECIES	STATUS	HABITAT
Phalacrocorax auritus (rookery site) Double-crested cormorant	--/CSC	Winters along the entire California coast and inland over the Coast Ranges into the Central Valley from Tehama County to Fresno County; a permanent resident along the coast from Monterey County to San Diego County, along the Colorado River, Imperial, Riverside, Kern and King Counties, and the islands off San Francisco; breeds in Siskiyou, Modoc, Lassen, Shasta, Plumas, and Mono Counties; also breeds in the San Francisco Bay Area and in Yolo and Sacramento Counties. Rocky coastlines, beaches, inland ponds, and lakes; needs open water for foraging, and nests in riparian forests or on protected islands, usually in snags.
FISH		
Archoplites interruptus Sacramento perch	--/CSC	Historically found in sloughs, slow-moving rivers, and lakes of the Central Valley. Prefers warm water. Aquatic vegetation is essential for young. Tolerates wide range of physio-chemical water conditions.
Hypomesus transpacificus Delta smelt	FT/CE	Primarily in the Sacramento–San Joaquin Estuary but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay. Occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand.
INVERTEBRATES		
Andrena blennospermatis Blennosperma vernal pool andrenid bee	--/--	This bee is oligolectic on vernal pool blennosperma. Bees nest in the uplands around vernal pools.
Anthicus antiochensis Antioch Dunes anthicid beetle	--/--	Extirpated from Antioch Dunes but present in several localities along the Sacramento and Feather Rivers.
Apodemia mormo langei Lange's metalmark butterfly	FE/--	Inhabits stabilized dunes along the San Joaquin River. Endemic to Antioch Dunes, Contra Costa County. Primary host plant is *eroginum undum var. auriculatum*; feeds on nectar of other wildflowers, as well as host plants.
Branchinecta longiantenna Longhorn fairy shrimp	FE/--	Eastern margin of central Coast Ranges from Contra Costa County to San Luis Obispo County; disjunct population in Madera County. Sm all, clear pools in sandstone rock outcrops of clear to moderately turbid clay- or grass-bottomed pools.
Branchinecta lynchi Vernal pool fairy shrimp	FT/--	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County. Common in vernal pools; also found in sandstone rock outcrop pools.

TABLE 3.4-3: SPECIAL STATUS ANIMALS PRESENT OR POTENTIALLY PRESENT

SPECIES	STATUS	HABITAT
Branchinecta mesovallensis Midvalley fairy shrimp	FC/--	Have been found in Sacramento, Solano, Yolo, Contra Costa, San Joaquin, Madera, Merced and Fresno counties. The increase of known locations lends additional support to the idea that the range and distribution of midvalley fairy shrimp is greater than the distribution of known occurrences. Shallow ephemeral pools, vernal swales, and various artificial ephemeral wetland habitats.
Callophrys mossii bayensis San Bruno elfin butterfly	FE/--	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on steep, north-facing slopes iwthin the fog belt. Larval host plant is sedum spathulifolium.
Coelus gracilis San Joaquin dune beetle	FE/--	Inhabits fossil dunes along the western edge of San Joaquin Valley; extirpated from Antioch Dunes (type locality). Inhabits sites containing sandy substrates.
Efferia antiochi Antioch efferian robberfly	--/--	Known only from Contra Costa and Fresno Counties.
Eucerceris ruficeps redheaded sphecid wasp	--/--	Central California interior dunes. Nest in hard-packed sand utilizing abandoned halictine bee burrows.
Helminthoglypta nickliniana bridgesi Bridges' coast range shoulderband	--/--	Inhabits open hillsides of Alameda and Contra Costa Counties. Tends to colonize under tall grasses and weeds.
Hygrotis curvipes Curved foot diving beetle	--/--	Distribution of this species is poorly known. Habitat requirements of this species are poorly known.
Idiostatus middlekauffi Middlekauff's shieldback katydid	--/--	Known only from Antioch Dunes.
Lepidurus packardi Vernal pool tadpole shrimp	FE/--	Shasta County south to Merced County. Vernal pools and ephemeral stock ponds.
Linderiella occidentalis California linderiella	--/--	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions. Water in the pools has very low alkalinity, conductivity, and TDS.
Lytta moesta Moestan blister beetle	--/--	Distribution of this species is poorly known. Annual grasslands, foothill woodlands or saltbush scrub.

TABLE 3.4-3: SPECIAL STATUS ANIMALS PRESENT OR POTENTIALLY PRESENT		
SPECIES	STATUS	HABITAT
Metapogon hurdi Hurd's metapogon robberfly	--/--	Known only from Antioch Dunes and Fresno.
Myrmosula pacifica Antioch multilid wasp	--/--	Very little is known about the habitat requirements for the Antioch multilid wasp.
Perdita scitula antiochensis Antioch andrenid bee	--/--	Known only from Antioch Dunes and Oakley. Visits flowers of *eriogonum, gutierrezia California, heterotheca grandifolia, lessingia grlandulifera*.
Philanthus nasalis Antioch specid wasp	--/--	Previously known only from Antioch Dunes, in Contra Costa County. Now known only from the inland sandhills in Santa Cruz County.
Sphecodogastra antiochensis Antioch Dunes halcitid bee	--/--	Restricted to Antioch Dunes. Host Plan is *oenothera deltoids howellii*. This bee nests in the ground in stabilized sand dunes in open, xeric areas.
MAMMALS		
Antrozous pallidus Pallid bat	--/CSC	Occurs in a variety of habitats from desert to coniferous forest. Most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Relies heavily on trees for roosts
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	--/--	Occurs in Alameda and Contra Costa Counties. Open grassy hilltops & open spaces in chaparral & blue oak/digger pine woodlands. Needs fine, deep well-drained soil for burrowing.
Lasiurus blossevillii Western red bat	--/CSC	Scattered throughout much of California at lower elevations. Found primarily in riparian and wooded habitats. Occurs at least seasonally in urban areas. Day roosts in trees within the foliage. Found in fruit orchards and sycamore riparian habitats in the central valley.
Lasiurus cinereus hoary bat	--/--	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage or medium to large trees. Feeds primarily on moths. Requires water.
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	--/CSC	Forest habitats of moderate canopy and moderate to dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves and other material. May be limited by availability of nest building materials.

TABLE 3.4-3: SPECIAL STATUS ANIMALS PRESENT OR POTENTIALLY PRESENT		
SPECIES	STATUS	HABITAT
Perognathus inornatus San Joaquin pocket mouse	--/--	Occurs throughout the San Joaquin Valley and in the Salinas Valley. Favors grasslands and scrub habitats with fine textured soils
Reithrodontomys raviventris salt-marsh harvest mouse	FE/CE	Only in saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat. Do not burrow, build loosely organized nests. Require higher areas for flood escape.
Taxidea taxus American badger	--/CSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Need sufficient food, friable soils and open, uncultivated ground. Prey on burrowing rodents. Dig burrows.
Vulpes macrotis mutica San Joaquin kit fox	FE/CT	Principally occurs in the San Joaquin Valley and adjacent open foothills to the west; recent records from 17 counties extending from Kern County north to Contra Costa County. Saltbush scrub, grassland, oak, savanna, and freshwater scrub
REPTILES		
Actinemys marmorata western pond turtle	--/CSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg-laying.
Anniella pulchra pulchra Silvery legless lizard	--/CSC	Along the Coast, Transverse, and Peninsular Ranges from Contra Costa County to San Diego County with spotty occurrences in the San Joaquin Valley. Habitats with loose soil for burrowing or thick duff or leaf litter; often forages in leaf litter at plant bases; may be found on beaches, sandy washes, and in woodland, chaparral, and riparian areas.
Masticophis flagellum ruddocki San Joaquin whipsnake	--/CSC	From Colusa county in the Sacramento Valley southward to the grapevine in the San Joaquin Valley and westward into the inner coast ranges. An isolated population occurs at Sutter Buttes. Known elevational range from 20 to 900 meters. Occurs in open, dry, vegetative associations with little or no tree cover. It occurs in valley grassland and saltbush scrub associations. Often occurs in association with mammal burrows.
Masticophis lateralis euryxanthus Alameda whipsnake	--/CSC	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna and woodland habitats. Mostly south-facing slopes and ravines, with rock outcrops, deep crevices or abundant rodent burrows, where shrubs form.
Phrynosoma blainvillii coast horned lizard	--/CSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches or loose soil for burial, and abundant supply of ants and other insects.

TABLE 3.4-3: SPECIAL STATUS ANIMALS PRESENT OR POTENTIALLY PRESENT		
SPECIES	STATUS	HABITAT
Thamnophis couchi gigas Giant garter snake	FT/CT	Central Valley from the vicinity of Burrel in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno. Sloughs, canals, low gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.

SOURCE: CDFW CNDDB 2013

NOTES: STATUS IS SHOWN FOR (FEDERAL, STATE). (__) INDICATES NO LISTING STATUS.
ABBREVIATIONS:
FE FEDERAL ENDANGERED
FT FEDERAL THREATENED
FC FEDERAL CANDIDATE
FSC FEDERAL SPECIES OF CONCERN
FD FEDERAL DELISTED
MBTA PROTECTED BY MIGRATORY BIRD TREATY ACT
CE CALIFORNIA ENDANGERED
CT CALIFORNIA THREATENED
CP CALIFORNIA FULLY PROTECTED UNDER §3511, 4700, 5050 AND 5515 FG CODE
CSC CDFW SPECIES OF SPECIAL CONCERN

Sensitive Natural Communities

The California Department of Fish and Wildlife (CDFW) considers sensitive natural communities to have significant biotic value, with species of plants and animals unique to each community. The CNDDB search revealed ten sensitive natural communities within 10 miles of Brentwood. This includes Alkali Meadows, Alkali Seeps, Cismontane Alkali Marsh, Coastal and Valley Freshwater Marsh, Coastal Brackish Marsh, Northern Claypan Vernal Pool, Serpentine Bunchgrass, Stabilized Interior Dunes, Valley Needlegrass Grassland, and Valley Sink Scrub. All ten of these community types were once more widely distributed throughout California, but have been modified or destroyed by grazing, cultivation, and urban development. Since the remaining examples of these sensitive natural communities are under continuing threat from future development, CDFW considers them "highest inventory priorities" for future conservation. Of these ten sensitive natural communities documented within 10 miles of Brentwood, none are located within one mile of the Brentwood city limits. Figure 3.4-3 illustrates the location of each sensitive natural community.

SALMON AND STEELHEAD TROUT FISHERIES

Salmon and steelhead trout are anadromous fish species that are present in the Bay Delta and San Joaquin and Sacramento River Basins. Anadromous fish are born in freshwater rivers and streams, and then migrate to the Pacific Ocean to grow and mature before returning to their place of origin to spawn. The San Joaquin and Sacramento River system produces most of the Chinook salmon

(*Oncorhynchus tshawytscha*) and a large percentage of the steelhead trout (*Oncorhynchus mykiss*) in California.

Anadromous fish resources once flourished naturally in the San Joaquin and Sacramento River system, but as a result of habitat destruction from water storage/diversion projects, flood control, mining, sedimentation, and bank degradation, they are protected species under the Federal Endangered Species Act. The San Joaquin and Sacramento River system has historically supported steelhead trout and four distinct spawning runs of Chinook salmon: fall, late fall, winter, and spring. The salmon runs have declined since the late 1800s and are now characterized as episodic. The Central Valley steelhead was Federally listed as threatened in 2003. The fall/late fall-run salmon is a Federal and State species of concern, and a candidate species for Federal listing. The spring-run Chinook salmon population is listed as threatened by both Federal and State agencies. Winter-run Chinook salmon population is listed as a Federally and State endangered species. Populations of Central Valley Steelhead and Chinook salmon are supported by natural spawning grounds and hatcheries within the San Joaquin and Sacramento River Basin.

Water remaining behind the dams by the start of the spawning run in October is often warmed by summer heat. Warm water and low water elevation are harmful to most coldwater anadromous fish species. Riparian vegetation is critical for the maintenance of high quality fish habitat. It provides cover, controls temperature, stabilizes stream banks, provides food, and buffers streams from erosion and impacts of adjacent land uses. Riparian vegetation also affects stream depth, current velocity, and substrate composition. The decline of riparian communities in California is a factor contributing to the loss of high quality fish habitat.

Marsh Creek Fishery

Chinook salmon and steelhead have lost more than 90% of their historical range in California due to fish passage barriers. In the Planning Area, Marsh Creek and its tributaries (Sand Creek, Deer Creek, and Dry Creek) historically provided spawning habitat for Chinook salmon and steelhead; however, several modifications to Marsh Creek, which occurred in the late 1950s and early 1960s for flood control purposes, have resulted in fish passage barriers. The flood control projects included a grade-control drop structure and a flood-control dam, both of which impeded fish passage along Marsh Creek. In addition to the impediments, mercury pollution due to mine tailings at the upstream end of Marsh Creek has caused elevated mercury levels within Marsh Creek and Marsh Creek Reservoir.

Chinook salmon had been observed spawning in the lower reaches of Marsh Creek below the impediments typically as part of the late fall-winter run of salmon; and juveniles that hatch would remain in Marsh Creek through about April, and then move to the Delta before setting course to the Pacific Ocean. The upper reaches were inaccessible after the installation of the impediments in the late 1950s even though upper reaches were historical spawning grounds and were known to provide ideal salmon spawning habitat and protection for juveniles as they develop.

In December 2010, a fish ladder was constructed at the grade-control drop structure located near the Brentwood Wastewater Treatment Plant. This fish ladder made fish passage at the drop structure possible for the first time since the late 1950s, enabling Chinook salmon and steelhead to

utilize the next seven miles of stream channel, up to the fish passage barrier at Marsh Creek Dam. This fish ladder also enabled fish passage into the Marsh Creek tributaries Sand Creek and Deer Creek.

In December 2012, Chinook salmon were documented for the first time above the fish ladder between Balfour Road and Central Boulevard. The fish ladder will enable an ongoing population of Chinook salmon in Marsh Creek and its tributaries up to the barrier at Marsh Creek Dam. Additionally, with time, steelhead are expected to populate these same reaches as they did before the construction of the fish barriers in the late 1950s.

Given the increased public interest in the restoration efforts along Marsh Creek, including the success of reintroducing Chinook salmon as described above, it is anticipated that interests will develop/increase in the foreseeable future for a fish passage structure at the Marsh Creek Reservoir/Dam to allow fish access to the upper Marsh Creek spawning habitat.

3.4.2 REGULATORY SETTING

There are a number of regulatory agencies whose responsibility includes the oversight of the natural resources of the State and nation including the California Department of Fish and Wildlife (CDFW), the U.S. Fish and Wildlife Service (USFWS), the U.S. Army Corps of Engineers (USACE), and the National Marine Fisheries Service (NMFS). These agencies often respond to declines in the quantity of a particular habitat or plant or animal species by developing protective measures for those species or habitat type. The following is an overview of the Federal, State, and local regulations that are applicable to implementing the General Plan.

FEDERAL

Federal Endangered Species Act

The Federal Endangered Species Act, passed in 1973, defines an endangered species as any species or subspecies that is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as any species or subspecies that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Once a species is listed it is fully protected from a "take" unless a take permit is issued by the United States Fish and Wildlife Service. A take is defined as the harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such conduct, including modification of its habitat (16 USC 1532, 50 CFR 17.3). Proposed endangered or threatened species are those species for which a proposed regulation, but not a final rule, has been published in the Federal Register.

Migratory Bird Treaty Act

To kill, posses, or trade a migratory bird, bird part, nest, or egg is a violation of the Federal Migratory Bird Treaty Act (FMBTA: 16 U.S.C., §703, Supp. I, 1989), unless it is in accordance with the regulations that have been set forth by the Secretary of the Interior.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC Section 668) protects these birds from direct take and prohibits the take or commerce of any part of these species. The USFWS administers the act, and reviews Federal agency actions that may affect these species.

Clean Water Act – Section 404

Section 404 of the Clean Water Act (CWA) regulates all discharges of dredged or fill material into waters of the U.S. Discharges of fill material includes the placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and subaqueous utility lines [33 C.F.R. §323.2(f)].

Waters of the U.S. include lakes, rivers, streams, intermittent drainages, mudflats, sandflats, wetlands, sloughs, and wet meadows [33 C.F.R. §328.3(a)]. Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R. §328.3(b)]. Waters of the U.S. exhibit a defined bed and bank and ordinary high water mark (OHWM). The OHWM is defined by the USACE as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" [33 C.F.R. §328.3(e)].

The USACE is the agency responsible for administering the permit process for activities that affect waters of the U.S. Executive Order 11990 is a Federal implementation policy, which is intended to result in no net loss of wetlands.

Clean Water Act – Section 401

Section 401 of the CWA (33 U.S.C. 1341) requires an applicant who is seeking a 404 permit to first obtain a water quality certification from the Regional Water Quality Control Board. To obtain the water quality certification, the Regional Water Quality Control Board must indicate that the proposed fill would be consistent with the standards set forth by the State.

Department of Transportation Act - Section 4(f)

Section 4(f) has been part of Federal law since 1966. It was enacted as Section 4(f) of the Department of Transportation (DOT) Act of 1966 and set forth in Title 49 United States Code (U.S.C.), Section 1653(f). In January 1983, as part of an overall recodification of the DOT Act, Section 4(f) was amended and codified in 49 U.S.C. Section 303. This law established policy on Lands, Wildlife and Waterfowl Refuges, and Historic Sites as follows:

> *It is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. The Secretary of Transportation shall*

cooperate and consult with the Secretaries of the Interior, Housing and Urban Development, and Agriculture, and with the States, in developing transportation plans and programs that include measures to maintain or enhance the natural beauty of lands crossed by transportation activities or facilities. The Secretary of Transportation may approve a transportation program or project (other than any project for a park road or parkway under section 204 of title 23) requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of a historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if: a) There is no prudent and feasible alternative to using that land; and b) The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

STATE

Fish and Game Code §2050-2097 - California Endangered Species Act

The California Endangered Species Act (CESA) protects certain plant and animal species when they are of special ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the State. CESA established that it is State policy to conserve, protect, restore, and enhance endangered species and their habitats.

CESA was expanded upon the original Native Plant Protection Act and enhanced legal protection for plants. To be consistent with Federal regulations, CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the Act as threatened species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Under State law, plant and animal species may be formally designated by official listing by the California Fish and Game Commission.

Fish and Game Code §1900-1913 California Native Plant Protection Act

In 1977 the State Legislature passed the Native Plant Protection Act (NPPA) in recognition of rare and endangered plants of the State. The intent of the law was to preserve, protect, and enhance endangered plants. The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare, and to require permits for collecting, transporting, or selling such plants. The NPPA includes provisions that prohibit the taking of plants designated as "rare" from the wild, and a salvage mandate for landowners, which requires notification of the CDFW 10 days in advance of approving a building site.

Fish and Game Code §3503, 3503.5, 3800 - Predatory Birds

Under the California Fish and Game Code, all predatory birds in the order Falconiformes or Strigiformes in California, generally called “raptors,” are protected. The law indicates that it is unlawful to take, posses, or destroy the nest or eggs of any such bird unless it is in accordance with the code. Any activity that would cause a nest to be abandoned or cause a reduction or loss in a reproductive effort is considered a take. This generally includes construction activities.

Fish and Game Code §1601-1603 – Streambed Alteration

Under the California Fish and Game Code, CDFW has jurisdiction over any proposed activities that would divert or obstruct the natural flow or change the bed, channel, or bank of any lake or stream. Private landowners or project proponents must obtain a "Streambed Alteration Agreement" from CDFW prior to any alteration of a lake bed, stream channel, or their banks. Through this agreement, the CDFW may impose conditions to limit and fully mitigate impacts on fish and wildlife resources. These agreements are usually initiated through the local CDFW warden and will specify timing and construction conditions, including any mitigation necessary to protect fish and wildlife from impacts of the work.

Public Resources Code § 21000 - California Environmental Quality Act

The California Environmental Quality Act (CEQA) identifies that a species that is not listed on the Federal or State endangered species list may be considered rare or endangered if the species meets certain criteria. Under CEQA public agencies must determine if a project would adversely affect a species that is not protected by FESA or CESA. Species that are not listed under FESA or CESA, but are otherwise eligible for listing (i.e., candidate or proposed) may be protected by the local government until the opportunity to list the species arises for the responsible agency.

Species that may be considered for review are included on a list of "Species of Special Concern," developed by the CDFW. Additionally, the California Native Plant Society (CNPS) maintains a list of plant species native to California that have low numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. List 1A contains plants that are believed to be extinct. List 1B contains plants that are rare, threatened, or endangered in California and elsewhere. List 2 contains plants that are rare, threatened, or endangered in California, but more numerous elsewhere. List 3 contains plants where additional information is needed. List 4 contains plants with a limited distribution.

Public Resources Code § 21083.4 - Oak woodlands conservation

In 2004, the California legislature enacted SB 1334, which added oak woodland conservation regulations to the Public Resources Code. This new law requires a county to determine whether a project, within its jurisdiction, may result in a conversion of oak woodlands that will have a significant effect on the environment. If a county determines that there may be a significant effect to oak woodlands, the county must require oak woodland mitigation alternatives to mitigate the significant effect of the conversion of oak woodlands. Such mitigation alternatives include: conservation through the use of conservation easements; planting and maintaining an appropriate number of replacement trees; contribution of funds to the Oak Woodlands Conservation Fund for the purpose of purchasing oak woodlands conservation easements; and/or other mitigation measures developed by the county.

California Oak Woodland Conservation Act

The California Legislature passed Assembly Bill 242, known as the California Oak Woodland Conservation Act, in 2001 as a result of widespread changes in land use patterns across the

landscape that were fragmenting oak woodland character over extensive areas. The Act created the California Oak Woodland Conservation Program within the Wildlife Conservation Board. The legislation provides funding and incentives to ensure the future viability of California's oak woodland resources by maintaining large scale land holdings or smaller multiple holdings that are not divided into fragmented, nonfunctioning biological units. The Act acknowledged that the conservation of oak woodlands enhances the natural scenic beauty for residents and visitors, increases real property values, promotes ecological balance, provides habitat for over 300 wildlife species, moderates temperature extremes, reduces soil erosion, sustains water quality, and aids with nutrient cycling, all of which affect and improve the health, safety, and general welfare of the residents of the State.

California Wetlands Conservation Policy

In August 1993, the Governor announced the "California Wetlands Conservation Policy." The goals of the policy are to establish a framework and strategy that will:

- Ensure no overall net loss and to achieve a long-term net gain in the quantity, quality, and permanence of wetland acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property.
- Reduce procedural complexity in the administration of State and Federal wetland conservation programs.
- Encourage partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetland conservation and restoration.

The Governor also signed Executive Order W-59-93, which incorporates the goals and objectives contained in the new policy and directs the Resources Agency to establish an Interagency Task Force to direct and coordinate administration and implementation of the policy.

LOCAL

East Contra Costa County Habitat Conservation Plan

The East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan (HCP/NCCP or Plan) is intended to provide regional conservation and development guidelines to protect natural resources while improving and streamlining the permit process for endangered species and wetland regulations. The Plan was developed by a team of scientists and planners with input from independent panels of science reviewers and stakeholders. Within the 174,018 acre inventory area, the Plan will provide permits for between 8,670 and 11,853 acres of development and will permit impacts on an additional 1,126 acres from rural infrastructure projects. The Preserve System to be acquired under the Plan will encompass 23,800 to 30,300 acres of land that will be managed for the benefit of 28 species as well as the natural communities that they, and hundreds of other species, depend upon. By proactively addressing the long-term conservation needs, the Plan strengthens local control over land use and provides greater flexibility in meeting other needs such as housing, transportation, and economic growth in the area. The City of Brentwood approved an ordinance in 2007 that requires future development projects to comply with the HCP/NCCP.

3.4.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on biological resources if it will:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

IMPACTS AND MITIGATION

Impact 3.4-1: General Plan implementation could have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service (Less than Significant)

Approval of the General Plan would not directly approve or entitle any development or infrastructure projects. However, implementation of the General Plan and Land Use Map would allow and facilitate future development in Brentwood, which could result in adverse impacts to special-status plant and wildlife species, as well as sensitive natural habitat or wildlife movement corridors.

Special Status Plant Species

The search revealed documented occurrences of 51 special status plant species (including three non-vascular plants) within 10 miles of Brentwood. Table 3.4-2 provides a list of special status

plant species that are documented within 10 miles of Brentwood, their habitat, and current protective status. Figure 3.4-2 illustrates the special status species located within one mile of Brentwood. Figure 3.4-3 illustrates the special status species located within 10 miles of Brentwood.

Subsequent development under the proposed General Plan could result in the direct loss of habitat areas associated with these special status plant species, since suitable habitat for these species does occur in the region. Additionally, indirect impacts to special status plant species could occur with implementation of the General Plan. Indirect impacts could include habitat degradation as a result of impacts to water quality.

Special status plant species receive protection from various Federal and State laws and regulations, including FESA and CESA. These regulations generally prohibit the taking of the plant species without a special permit. Additionally, the proposed General Plan includes numerous policies and actions intended to reduce or avoid impacts to special status plant species. These policies and actions are listed below.

Special Status Animal Species

The search revealed documented occurrences of 55 special status animal species within 10 miles of Brentwood. This includes: three amphibians, fourteen birds, two fish, twenty-one invertebrates, nine mammals, and six reptiles. Table 3.4-3 provides a list of the special-status animal species that are documented within 10 miles of Brentwood, their habitat, and current protective status. Figure 3.4-3 illustrates the location of each documented occurrence.

Subsequent development under the proposed General Plan could result in the direct loss of habitat areas associated with these special status animal species, since suitable habitat for these species does occur in the region. Additionally, indirect impacts to special status animal species could occur with implementation of the General Plan. Indirect impacts could include habitat degradation as a result of impacts to water quality, increased human presence, and the loss of foraging habitat.

Special status animal species receive protection from various Federal and State laws and regulations, including FESA and CESA. These regulations generally prohibit the taking of a species or direct impact to foraging and breeding habitat without a special permit. Additionally, the proposed General Plan includes numerous policies and actions intended to reduce or avoid impacts to special status animal species. These policies and actions are listed below.

Conclusion

Construction and maintenance activities associated with future development projects under the proposed General Plan could result in the direct and indirect loss or indirect disturbance of special status plant or animal species or their habitats that are known to occur, or have potential to occur, in the region. Impacts to special status species or their habitat could result in a substantial reduction in local population size, lowered reproductive success, or habitat fragmentation. Significant impacts on special status species associated with individual subsequent projects could include:

- increased mortality caused by higher numbers of automobiles in new areas of development;
- direct mortality from the collapse of underground burrows, resulting from soil compaction;
- direct mortality resulting from the movement of equipment and vehicles through construction areas;
- direct mortality resulting from removal of trees with active nests;
- direct mortality or loss of suitable habitat resulting from the trimming or removal of obligate host plants;
- direct mortality resulting from fill of wetlands features;
- loss of breeding and foraging habitat resulting from the filling of seasonal or perennial wetlands;
- loss of breeding, foraging, and refuge habitat resulting from the permanent removal of riparian vegetation;
- loss of suitable habitat for vernal pool invertebrates resulting from the destruction or degradation of vernal pools or seasonal wetlands;
- abandoned eggs or young and subsequent nest failure for special status nesting birds, including raptors, and other non-special status migratory birds resulting from construction-related noises;
- loss or disturbance of rookeries and other colonial nests;
- loss of suitable foraging habitat for special status raptor species;
- loss of migration corridors resulting from the construction of permanent structures or features; and
- impacts to fisheries/species associated with waterways.

Subsequent development projects will be required to comply with the General Plan and adopted Federal, State, and local regulations for the protection of special status plants and animals, including habitat. The City of Brentwood has prepared the General Plan to include numerous policies and actions intended to protect special status plants and animals, including habitat, from adverse effects associated with future development and improvement projects. While future development has the potential to result in significant impacts to protected special status plants and animals, including habitat, the implementation of the policies and actions listed below, as well as Federal and State regulations, would reduce impacts to these resources to a **less than significant** level.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy COS 1-1: General Plan land use designations that include agriculture, permanent open space, parks, and similar uses, as well as waterways (i.e., Marsh Creek, Dry Creek, Deer Creek, and Sand Creek), shall be considered open space.

Policy COS 1-2: Preserve open space for conservation, recreation, and agricultural uses.

Policy COS 1-3: Conversion of open space, as defined under Policy COS 1-1, to developed residential, commercial, industrial, or other similar types of uses, shall be strongly discouraged. Undeveloped land that is designated for urban uses may be developed if needed to support economic development, and if the proposed development is consistent with the General Plan Land Use Map.

Policy COS 1-4: Where possible, integrate open space and stream corridors with trails and other recreational open space in an environmentally sustainable manner.

Policy COS 1-5: Recognize urban open space as essential to maintaining a high quality of life within the city limits of Brentwood.

Policy COS 1-6: Support regional and local natural resource preservation plans of public agencies that retain and protect open space within the city limits, the Sphere of Influence, and the Planning Area.

Policy COS 1-7: Encourage public and private efforts to preserve open space.

Policy COS 1-8: Common or private open space that is not City property shall be privately maintained.

Policy COS 1-9: Encourage the protection and incorporation of existing, native, mature, non-orchard trees and areas of natural vegetation as part of new development.

Policy COS 2-14: Encourage agricultural landowners in Brentwood's Planning Area to participate in Williamson Act contracts and other programs that provide long-term protection of agricultural lands.

Policy COS 3-1: Sensitive habitats include creek corridors, wetlands, vernal pools, riparian areas, wildlife and fish migration corridors, native plant nursery sites, waters of the United States, sensitive natural communities, and other habitats designated by State and Federal agencies.

Policy COS 3-2: Preserve and enhance those biological communities that contribute to Brentwood's and the region's biodiversity including, but not limited to, wetlands, riparian areas, aquatic habitat, and agricultural lands.

Policy COS 3-3: Focus conservation efforts on high priority conservation areas that contain suitable habitat for endangered, threatened, migratory, or special-status species and that can be managed with minimal interference with nearby urban land uses.

Policy COS 3-4: Conserve existing native vegetation where possible and integrate regionally native plant species into development and infrastructure projects where appropriate.

Policy COS 3-5: Avoid removal of large, mature trees that provide wildlife habitat or contribute to the visual quality of the environment to the greatest extent feasible through appropriate project design and building siting. If full avoidance is not possible, prioritize planting of replacement trees on-site over off-site locations.

Policy COS 4-1: Where feasible, protect and enhance surface water quality in creeks, streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat, and vernal pools through sound land use planning, community design, and site planning.

Policy COS 4-2: Rehabilitate existing channelized waterways, as feasible, to remove concrete linings and allow for a connection with the stream channel and the natural water table. Avoid creating additional channelized waterways, unless no other alternative is available to protect human health, safety, and welfare.

Policy COS 4-3: Where feasible, restore existing channelized waterways to a more natural condition. Restoration efforts should provide for naturalized hydraulic functioning. Restoration should also promote the growth of riparian vegetation to effectively stabilize banks, screen pollutants from runoff entering the channel, enhance fisheries, and provide other opportunities for natural habitat restoration.

Policy COS 4-4: Require discretionary projects, as well as new flood control and storm water conveyance projects, to integrate best management practices and natural features to the greatest extent feasible, while ensuring that these features adequately convey and control storm water to protect human health, safety, and welfare.

Policy COS 4-5: Encourage the use of natural features such as bio swales, vegetation, retention ponds, and other measures to remove storm water pollutants prior to discharge, subject to State regulations.

Policy COS 4-6: Where feasible, new development adjacent to creeks and streams should include opportunities for beneficial uses, such as flood control, ecological restoration, public access trails, and walkways.

Policy COS 4-7: Consult with State and Federal agencies during the development review process to help identify wetland and riparian habitat that has candidacy for restoration, conservation, and/or mitigation. Focus restoration and/or conservation efforts on areas that would maximize multiple beneficial uses for such habitat.

Policy COS 4-8: Conserve riparian habitat along local creeks, including but not limited to Marsh Creek, Deer Creek, Dry Creek, and Sand Creek, in order to maintain water quality and provide suitable habitat for native fish and plant species.

Policy COS 4-9: Consider the effects of development on ground and surface water quality, and implement measures to reduce water contamination.

Policy COS 4-10: Where feasible, encourage and support multipurpose detention basins that provide water quality protection, storm water detention, open space amenities, and recreational amenities.

Policy COS 9-9: Encourage and support the use of drought-tolerant and regionally native plants in landscaping.

ACTIONS

Action COS 1a: Review all development proposals involving unincorporated land within the jurisdiction of Contra Costa County, and within or adjacent to the Sphere of Influence or Planning Area, to ensure adequate preservation of community separators and open space resources.

Action COS 1b: Adopt an ordinance that specifies standards and responsibilities for the maintenance of private open space lands within the city limits. The standards should include provisions for public access, habitat management, water quality protection, safety, and aesthetics.

Action COS 1c: Implement a coordinated and cost-effective plan for City management and maintenance of publicly-owned open space within the city limits.

Action COS 3a: Require new development, as well as infrastructure projects, long-range planning projects, and other projects, to comply with the requirements of the East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan to ensure that potentially significant impacts to special-status species and sensitive resources are adequately addressed

Action COS 3b: Where sensitive biological habitats have been identified on or immediately adjacent to a project site, the project shall include appropriate mitigation measures identified by a qualified biologist.

Action COS 3c: Develop CEQA Thresholds of Significance to assist staff, project applicants, and decision-makers in determining whether a project may have a significant effect on the environment under Section 21082.2 of the California Environmental Quality Act (CEQA).

Action COS 4a: Coordinate with interested public and private entities to create new and expanded public access trails along creeks and streams that connect to parks and open space areas within Brentwood's Planning Area.

Action COS 4b: Continue to identify which storm water and drainage facilities are in need of repair and address these needs through the City's Capital Improvement Program.

Action COS 4c: Utilize existing regulations and procedures, including but not limited to, the Zoning Ordinance and the environmental review process, in order to conserve wetlands and riparian habitat within the city limits and the Planning Area.

Action COS 4d: Coordinate with the California Department of Fish and Wildlife, Contra Costa County, and local watershed protection groups to identify potentially impacted aquatic habitat within Brentwood's Planning Area and to develop riparian management guidelines to be implemented by development, recreation, and other projects adjacent to creeks, streams, and other waterways.

Action COS 4e: Continue to implement, and periodically review/update as necessary, Chapter 15.52 (Grading, Erosion and Sediment Control) of the Brentwood Municipal Code. The City shall review projects to ensure that best management practices are implemented during construction and site grading activities, as well as in project design to reduce pollutant runoff into water bodies.

Action COS 4f: Explore revising Title 17 (Zoning) of the Brentwood Municipal Code to include standards for creek setbacks and the protection of riparian habitat along creek corridors. The standards should include minimum setback requirements, site design standards, and requirements for the ongoing maintenance of creek and riparian habitat on public and private lands.

Action COS 4g: Update the Creek Trails and Revegetation Master Plan. Solicit public input during the preparation of the update, and include outreach efforts to community organizations with knowledge of and interest in key issues associated with local creeks, trails, and habitat restoration.

Action COS 4h: Encourage volunteer-based programs that organize community creek restoration and/or clean-up events and provide public education regarding the benefits of city and regional water resources.

Action COS 4i: Provide a conservation page (or similar page) on the City's website that provides links to resource agencies (i.e., CDFW, USFWS, USACE, etc.) and provides information regarding local and regional conservation and environmental programs, to the extent that the City has readily available information.

Action COS 9g: Develop a list of drought-tolerant and native plants appropriate for use in Brentwood and review development projects for adherence to this list.

Impact 3.4-2: General Plan implementation could have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service (Less than Significant)

The California Department of Fish and Wildlife (CDFW) considers sensitive natural communities to have significant biotic value, with species of plants and animals unique to each community. The CNDDB search revealed ten sensitive natural communities within 10 miles of Brentwood. This includes Alkali Meadows, Alkali Seeps, Cismontane Alkali Marsh, Coastal and Valley Freshwater Marsh, Coastal Brackish Marsh, Northern Claypan Vernal Pool, Serpentine Bunchgrass, Stabilized Interior Dunes, Valley Needlegrass Grassland, and Valley Sink Scrub. All ten of these community types were once more widely distributed throughout California, but have been modified or destroyed by grazing, cultivation, and urban development. Since the remaining examples of these sensitive natural communities are under continuing threat from future development, CDFW considers them "highest inventory priorities" for future conservation. Of these ten sensitive natural communities documented within 10 miles of Brentwood, none are located within one mile of the Brentwood city limits. Figure 3.4-3 illustrates the location of each sensitive natural community.

While not always documented as a sensitive natural community in the CNDDB, streams, rivers, wet meadows, and vernal pools are of high concern because they provide unique aquatic habitat for many endemic species, including special status plants, birds, invertebrates, and amphibians. The city of Brentwood contains numerous aquatic habitats that qualify as sensitive habitat.

Marsh Creek, the most prominent water feature in Brentwood, flows from the south to the north through the center of the city. Within the city, the upstream segment (southern quarter) of the creek is still a natural creek; however, the downstream segment of the creek has been converted from a natural creek to a flood control channel. Dry Creek, Deer Creek, and Sand Creek each flow from the west to the east and join Marsh Creek within the city of Brentwood. Dry Creek is located in the southern portion of the city, and is about 5.8 miles in length. Deer Creek is located north of Dry Creek. Deer Creek is about nine miles long. Within the city, the western segment of Deer Creek is still a natural creek; but the eastern segment of Deer Creek has been converted from a natural creek to a flood control channel. Sand Creek is located north of Deer Creek near the center of the city. Sand Creek is about 19 miles long. Within the city, the eastern segment of Sand Creek has been converted to a flood control channel.

Subsequent development projects will be required to comply with the General Plan and adopted Federal, State, and local regulations for the protection of sensitive natural communities, including riparian habitat. The City of Brentwood has prepared the General Plan to include numerous policies and actions intended to protect sensitive natural communities, including riparian habitat, from adverse effects associated with future development and improvement projects. While future development has the potential to result in significant impacts to protected habitats, the implementation of the policies and actions listed below, as well as Federal and State regulations, would reduce impacts to these resources to a **less than significant** level.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy COS 1-1: General Plan land use designations that include agriculture, permanent open space, parks, and similar uses, as well as waterways (i.e., Marsh Creek, Dry Creek, Deer Creek, and Sand Creek), shall be considered open space.

Policy COS 1-3: Conversion of open space, as defined under Policy COS 1-1, to developed residential, commercial, industrial, or other similar types of uses, shall be strongly discouraged. Undeveloped land that is designated for urban uses may be developed if needed to support economic development, and if the proposed development is consistent with the General Plan Land Use Map.

Policy COS 1-4: Where possible, integrate open space and stream corridors with trails and other recreational open space in an environmentally sustainable manner.

Policy COS 3-1: Sensitive habitats include creek corridors, wetlands, vernal pools, riparian areas, wildlife and fish migration corridors, native plant nursery sites, waters of the United States, sensitive natural communities, and other habitats designated by State and Federal agencies.

Policy COS 3-2: Preserve and enhance those biological communities that contribute to Brentwood's and the region's biodiversity including, but not limited to, wetlands, riparian areas, aquatic habitat, and agricultural lands.

Policy COS 4-1: Where feasible, protect and enhance surface water quality in creeks, streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat, and vernal pools through sound land use planning, community design, and site planning.

Policy COS 4-2: Rehabilitate existing channelized waterways, as feasible, to remove concrete linings and allow for a connection with the stream channel and the natural water table. Avoid creating additional channelized waterways, unless no other alternative is available to protect human health, safety, and welfare.

Policy COS 4-3: Where feasible, restore existing channelized waterways to a more natural condition. Restoration efforts should provide for naturalized hydraulic functioning. Restoration should also promote the growth of riparian vegetation to effectively stabilize banks, screen pollutants from runoff entering the channel, enhance fisheries, and provide other opportunities for natural habitat restoration.

Policy COS 4-4: Require discretionary projects, as well as new flood control and storm water conveyance projects, to integrate best management practices and natural features to the greatest extent feasible, while ensuring that these features adequately convey and control storm water to protect human health, safety, and welfare.

Policy COS 4-5: Encourage the use of natural features such as bio swales, vegetation, retention ponds, and other measures to remove storm water pollutants prior to discharge, subject to State regulations.

Policy COS 4-6: Where feasible, new development adjacent to creeks and streams should include opportunities for beneficial uses, such as flood control, ecological restoration, public access trails, and walkways.

Policy COS 4-7: Consult with State and Federal agencies during the development review process to help identify wetland and riparian habitat that has candidacy for restoration, conservation, and/or mitigation. Focus restoration and/or conservation efforts on areas that would maximize multiple beneficial uses for such habitat.

Policy COS 4-8: Conserve riparian habitat along local creeks, including but not limited to Marsh Creek, Deer Creek, Dry Creek, and Sand Creek, in order to maintain water quality and provide suitable habitat for native fish and plant species.

Policy COS 4-9: Consider the effects of development on ground and surface water quality, and implement measures to reduce water contamination.

Policy COS 4-10: Where feasible, encourage and support multipurpose detention basins that provide water quality protection, storm water detention, open space amenities, and recreational amenities.

ACTIONS

Action COS 3b: Where sensitive biological habitats have been identified on or immediately adjacent to a project site, the project shall include appropriate mitigation measures identified by a qualified biologist.

Action COS 4a: Coordinate with interested public and private entities to create new and expanded public access trails along creeks and streams that connect to parks and open space areas within Brentwood's Planning Area.

Action COS 4c: Utilize existing regulations and procedures, including but not limited to, the Zoning Ordinance and the environmental review process, in order to conserve wetlands and riparian habitat within the city limits and the Planning Area.

Action COS 4d: Coordinate with the California Department of Fish and Wildlife, Contra Costa County, and local watershed protection groups to identify potentially impacted aquatic habitat within Brentwood's Planning Area and to develop riparian management guidelines to be implemented by development, recreation, and other projects adjacent to creeks, streams, and other waterways.

Action COS 4e: Continue to implement, and periodically review/update as necessary, Chapter 15.52 (Grading, Erosion and Sediment Control) of the Brentwood Municipal Code. The City shall review projects to ensure that best management practices are implemented during construction and site grading activities, as well as in project design to reduce pollutant runoff into water bodies.

Action COS 4f: Explore revising Title 17 (Zoning) of the Brentwood Municipal Code to include standards for creek setbacks and the protection of riparian habitat along creek corridors. The standards should include minimum setback requirements, site design standards, and requirements for the ongoing maintenance of creek and riparian habitat on public and private lands.

Action COS 4g: Update the Creek Trails and Revegetation Master Plan. Solicit public input during the preparation of the update, and include outreach efforts to community organizations with knowledge of and interest in key issues associated with local creeks, trails, and habitat restoration.

Action COS 4h: Encourage volunteer-based programs that organize community creek restoration and/or clean-up events and provide public education regarding the benefits of city and regional water resources.

Action COS 4i: Provide a conservation page (or similar page) on the City's website that provides links to resource agencies (i.e., CDFW, USFWS, USACE, etc.) and provides information regarding local and regional conservation and environmental programs, to the extent that the City has readily available information.

Impact 3.4-3: General Plan implementation could have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means (Less than Significant)

Streams, rivers, wet meadows, and vernal pools (wetlands and jurisdictional waters) are of high concern because they provide unique aquatic habitat (perennial and ephemeral) for many endemic species, including special status plants, birds, invertebrates, and amphibians. These aquatic habitats oftentimes qualify as protected wetlands or jurisdictional waters and are protected from disturbance through the CWA.

Brentwood contains numerous aquatic habitats that qualify as Federally protected wetlands and jurisdictional waters. The largest creek draining the watershed is Marsh Creek, which generally flows from the east to the west near the southern boundary of the watershed and from the south to the north near the eastern boundary of the watershed. Marsh Creek flows from the south to the north through the center of the city of Brentwood. Within the city, the upstream segment (southern quarter) of the creek is still a natural creek; however, the downstream segment of the creek has been converted from a natural creek to a flood control channel. The Marsh Creek Reservoir and Dam are located along Marsh Creek upstream of the city. The Reservoir and Dam are owned and operated by the Contra Costa County Flood Control and Water Conservation District. The dam reduces the flow rate in Marsh Creek, thereby reducing the potential for flooding along the creek within the city of Brentwood. Dry Creek, Deer Creek, and Sand Creek each flow from the west to the east and join Marsh Creek within the city of Brentwood.

Dry Creek is located in the southern portion of the city, and is about 5.8 miles in length. The Dry Creek Reservoir is located along Dry Creek near the west boundary of the city. The Dry Creek Basin is located along the creek within the city in Creekside Park. Each of these facilities reduce the flow in Dry Creek, thereby reducing the potential for flooding downstream from the facility.

Deer Creek is located north of Dry Creek. Deer Creek is about nine miles long. Within the city, the western segment of Deer Creek is still a natural creek; but the eastern segment of Deer Creek has been converted from a natural creek to a flood control channel. The Deer Creek Reservoir is located along Deer Creek west of the city of Brentwood. The Deer Creek Basin is located within the city near the intersection of Buena Vista Street and Fairview Avenue. Each of these facilities reduce the flow in Deer Creek, thereby reducing the potential for flooding downstream of the facility.

Sand Creek is located north of Deer Creek near the center of the city. Sand Creek is about 19 miles long. Within the city, the eastern segment of Sand Creek has been converted to a flood control channel. The Upper Sand Creek Basin is located along Sand Creek west of the city. The Lower Sand Creek Basin is located within the city near the intersection north of Sand Creek Road and east of Highland Road. The Contra Costa County Flood Control and Water Conservation District is currently in the process of designing and constructing an expansion of the Upper Sand Creek Basin so that it will provide a greater level of downstream flood protection. Each of these facilities reduce the flow in Sand Creek, thereby reducing the potential for flooding downstream of the facility.

Section 404 of the CWA requires any project that involves disturbance to a wetland or water of the U.S. to obtain a permit that authorizes the disturbance. If a wetland or jurisdictional water is determined to be present, then a permit must be obtained from the USACE to authorize a disturbance to the wetland. Although subsequent projects may disturb protected wetlands and/or jurisdictional waters, the regulatory process that is established through Section 404 of the CWA ensures that there is “no net loss” of wetlands or jurisdictional waters. If, through the design process, it is determined that a future development project cannot avoid a wetland or jurisdictional water, then the USACE would require that there be an equal amount of wetland created elsewhere to mitigate any loss of wetland.

Construction activities associated with individual future projects could result in the disturbance or loss of waters of the United States. This includes perennial and intermittent drainages; unnamed drainages; vernal pools; freshwater marshes; and other types of seasonal and perennial wetland communities. Wetlands and other waters of the United States could be affected through direct removal, filling, hydrological interruption (including dewatering), alteration of bed and bank, and other construction-related activities.

Because the proposed project is a planning document and thus, no physical changes will occur to the environment, adoption of the proposed project would not directly impact the environment. There is a reasonable chance that water features could be impacted throughout the buildout of the individual projects. The implementation of an individual project would require a detailed and site-specific review of the site to determine the presence or absence of water features. If water features are present and disturbance is required, Federal and State laws require measures to reduce, avoid, or compensate for impacts to these resources. The requirements of these Federal and State laws are implemented through the permit process.

Subsequent development projects will be required to comply with the General Plan and adopted Federal, State, and local regulations for the protection of sensitive natural communities, including protected wetlands. The City of Brentwood has prepared the General Plan to include numerous policies and actions intended to protect wetlands and waters of the U.S. from adverse effects associated with future development and improvement projects. While future development has the potential to result in significant impacts to protected water features, the implementation of the policies and actions listed below, as well as Federal and State regulations, would reduce impacts to these resources to a **less than significant** level.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy COS 1-1: General Plan land use designations that include agriculture, permanent open space, parks, and similar uses, as well as waterways (i.e., Marsh Creek, Dry Creek, Deer Creek, and Sand Creek), shall be considered open space.

Policy COS 1-3: Conversion of open space, as defined under Policy COS 1-1, to developed residential, commercial, industrial, or other similar types of uses, shall be strongly discouraged. Undeveloped land that is designated for urban uses may be developed if needed to support economic development, and if the proposed development is consistent with the General Plan Land Use Map.

Policy COS 1-4: Where possible, integrate open space and stream corridors with trails and other recreational open space in an environmentally sustainable manner.

Policy COS 3-1: Sensitive habitats include creek corridors, wetlands, vernal pools, riparian areas, wildlife and fish migration corridors, native plant nursery sites, waters of the United States, sensitive natural communities, and other habitats designated by State and Federal agencies.

Policy COS 3-2: Preserve and enhance those biological communities that contribute to Brentwood's and the region's biodiversity including, but not limited to, wetlands, riparian areas, aquatic habitat, and agricultural lands.

Policy COS 4-1: Where feasible, protect and enhance surface water quality in creeks, streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat, and vernal pools through sound land use planning, community design, and site planning.

Policy COS 4-2: Rehabilitate existing channelized waterways, as feasible, to remove concrete linings and allow for a connection with the stream channel and the natural water table. Avoid creating additional channelized waterways, unless no other alternative is available to protect human health, safety, and welfare.

Policy COS 4-3: Where feasible, restore existing channelized waterways to a more natural condition. Restoration efforts should provide for naturalized hydraulic functioning. Restoration should also promote the growth of riparian vegetation to effectively stabilize banks, screen pollutants from runoff entering the channel, enhance fisheries, and provide other opportunities for natural habitat restoration.

Policy COS 4-4: Require discretionary projects, as well as new flood control and storm water conveyance projects, to integrate best management practices and natural features to the greatest extent feasible, while ensuring that these features adequately convey and control storm water to protect human health, safety, and welfare.

Policy COS 4-5: Encourage the use of natural features such as bio swales, vegetation, retention ponds, and other measures to remove storm water pollutants prior to discharge, subject to State regulations.

Policy COS 4-6: Where feasible, new development adjacent to creeks and streams should include opportunities for beneficial uses, such as flood control, ecological restoration, public access trails, and walkways.

Policy COS 4-7: Consult with State and Federal agencies during the development review process to help identify wetland and riparian habitat that has candidacy for restoration, conservation, and/or mitigation. Focus restoration and/or conservation efforts on areas that would maximize multiple beneficial uses for such habitat.

Policy COS 4-8: Conserve riparian habitat along local creeks, including but not limited to Marsh Creek, Deer Creek, Dry Creek, and Sand Creek, in order to maintain water quality and provide suitable habitat for native fish and plant species.

Policy COS 4-9: Consider the effects of development on ground and surface water quality, and implement measures to reduce water contamination.

Policy COS 4-10: Where feasible, encourage and support multipurpose detention basins that provide water quality protection, storm water detention, open space amenities, and recreational amenities.

ACTIONS

Action COS 3b: Where sensitive biological habitats have been identified on or immediately adjacent to a project site, the project shall include appropriate mitigation measures identified by a qualified biologist.

Action COS 4a: Coordinate with interested public and private entities to create new and expanded public access trails along creeks and streams that connect to parks and open space areas within Brentwood's Planning Area.

Action COS 4c: Utilize existing regulations and procedures, including but not limited to, the Zoning Ordinance and the environmental review process, in order to conserve wetlands and riparian habitat within the city limits and the Planning Area.

Action COS 4d: Coordinate with the California Department of Fish and Wildlife, Contra Costa County, and local watershed protection groups to identify potentially impacted aquatic habitat within Brentwood's Planning Area and to develop riparian management guidelines to be implemented by development, recreation, and other projects adjacent to creeks, streams, and other waterways.

Action COS 4e: Continue to implement, and periodically review/update as necessary, Chapter 15.52 (Grading, Erosion and Sediment Control) of the Brentwood Municipal Code. The City shall review projects to ensure that best management practices are implemented during construction and site grading activities, as well as in project design to reduce pollutant runoff into water bodies.

Action COS 4f: Explore revising Title 17 (Zoning) of the Brentwood Municipal Code to include standards for creek setbacks and the protection of riparian habitat along creek corridors. The standards should include minimum setback requirements, site design standards, and requirements for the ongoing maintenance of creek and riparian habitat on public and private lands.

Action COS 4g: Update the Creek Trails and Revegetation Master Plan. Solicit public input during the preparation of the update, and include outreach efforts to community organizations with knowledge of and interest in key issues associated with local creeks, trails, and habitat restoration.

Action COS 4h: Encourage volunteer-based programs that organize community creek restoration and/or clean-up events and provide public education regarding the benefits of city and regional water resources.

Action COS 4i: Provide a conservation page (or similar page) on the City's website that provides links to resource agencies (i.e., CDFW, USFWS, USACE, etc.) and provides information regarding local and regional conservation and environmental programs, to the extent that the City has readily available information.

Impact 3.4-4: General Plan implementation would not 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 (Less than Significant)

Habitat loss, fragmentation, and degradation resulting from land use changes or habitat conversion can alter the use and viability of wildlife movement corridors (i.e., linear habitats that naturally connect and provide passage between two or more otherwise disjunct larger habitats or habitat fragments). Wildlife habitat corridors maintain connectivity for daily movement, travel, mate-seeking, and migration; plant propagation; genetic interchange; population movement in response to environmental change or natural disaster; and recolonization of habitats subject to local extirpation or removal. The suitability of a habitat as a wildlife movement corridor is related to, among other factors, the habitat corridor's dimensions (length and width), topography, vegetation, exposure to human influence, and the species in question.

Species utilize movement corridors in several ways. "Passage species" are those species that use corridors as thru-ways between outlying habitats. The habitat requirements for passage species are generally less than those for corridor dwellers. Passage species use corridors for brief durations, such as for seasonal migrations or movement within a home range. As such, movement corridors do not necessarily have to meet any of the habitat requirements necessary for a passage species everyday survival. "Corridor dwellers" are those species that have limited dispersal capabilities – a category that includes most plants, insects, reptiles, amphibians, small mammals, and birds – and use corridors for a greater length of time.

The most prominent species using movement corridors through Brentwood are the Chinook salmon and steelhead trout. Historically, Marsh Creek and its tributaries (Sand Creek, Deer Creek, and Dry Creek) provided spawning habitat for Chinook salmon and steelhead; however, several modifications to Marsh Creek, which occurred in the late 1950s and early 1960s for flood control purposes, have resulted in fish passage barriers. In addition to the impediments, mercury pollution due to mine tailings at the upstream end of Marsh Creek has caused elevated mercury levels within Marsh Creek and Marsh Creek Reservoir.

Chinook salmon had been observed spawning in the lower reaches of Marsh Creek below the impediments typically as part of the late fall-winter run of salmon; and juveniles that hatch would remain in Marsh Creek through about April, and then move to the Delta before setting course to the Pacific Ocean. The upper reaches were inaccessible after the installation of the impediments in the late 1950s even though upper reaches were historical spawning grounds and were known to provide ideal salmon spawning habitat and protection for juveniles as they develop.

In December 2010, a fish ladder was constructed at the grade-control drop structure located near the Brentwood Wastewater Treatment Plant. This fish ladder made fish passage at the drop structure possible for the first time since the late 1950s, enabling Chinook salmon and steelhead to utilize the next seven miles of stream channel, up to the fish passage barrier at Marsh Creek Dam.

This fish ladder also enabled fish passage into the Marsh Creek tributaries Sand Creek and Deer Creek.

In December 2012, Chinook salmon were documented for the first time above the fish ladder between Balfour Road and Central Boulevard. The fish ladder will enable an ongoing population of Chinook salmon in Marsh Creek and its tributaries up to the barrier at Marsh Creek Dam. Additionally, with time, steelhead are expected to populate these same reaches as they did before the construction of the fish barriers in the late 1950s.

Given the increased public interest in the restoration efforts along Marsh Creek, including the success of reintroducing Chinook salmon as described above, it is anticipated that interests will develop/increase in the foreseeable future for a fish passage structure at the Marsh Creek Reservoir/Dam to allow fish access to the upper Marsh Creek spawning habitat.

Because the proposed project is a planning document and thus, no physical changes will occur to the environment, adoption of the proposed project would not directly impact the environment. There is a reasonable chance that movement corridors could be impacted throughout the buildout of the individual projects. The implementation of an individual project would require a detailed and site-specific review of the site to determine the presence or absence of movement corridors on a given project. If movement corridors are present and disturbance is required, Federal and State laws require measures to reduce, avoid, or compensate for impacts to these resources. The requirements of these Federal and State laws are implemented through the permit process.

Subsequent development projects will be required to comply with the General Plan and adopted Federal, State, and local regulations for the protection of movement corridors. The City of Brentwood has prepared the General Plan to include numerous policies and actions intended to protect movement corridors from adverse effects associated with future development and improvement projects. While future development has the potential to result in significant impacts to protected movement corridors, the implementation of the policies and actions listed below, as well as Federal and State regulations, would reduce impacts to these resources to a **less than significant** level.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy COS 1-1: General Plan land use designations that include agriculture, permanent open space, parks, and similar uses, as well as waterways (i.e., Marsh Creek, Dry Creek, Deer Creek, and Sand Creek), shall be considered open space.

Policy COS 1-2: Preserve open space for conservation, recreation, and agricultural uses.

Policy COS 1-3: Conversion of open space, as defined under Policy COS 1-1, to developed residential, commercial, industrial, or other similar types of uses, shall be strongly discouraged. Undeveloped land that is designated for urban uses may be developed if needed to support economic development, and if the proposed development is consistent with the General Plan Land Use Map.

Policy COS 1-4: Where possible, integrate open space and stream corridors with trails and other recreational open space in an environmentally sustainable manner.

Policy COS 1-5: Recognize urban open space as essential to maintaining a high quality of life within the city limits of Brentwood.

Policy COS 1-6: Support regional and local natural resource preservation plans of public agencies that retain and protect open space within the city limits, the Sphere of Influence, and the Planning Area.

Policy COS 1-7: Encourage public and private efforts to preserve open space.

Policy COS 1-8: Common or private open space that is not City property shall be privately maintained.

Policy COS 1-9: Encourage the protection and incorporation of existing, native, mature, non-orchard trees and areas of natural vegetation as part of new development.

Policy COS 2-14: Encourage agricultural landowners in Brentwood's Planning Area to participate in Williamson Act contracts and other programs that provide long-term protection of agricultural lands.

Policy COS 3-1: Sensitive habitats include creek corridors, wetlands, vernal pools, riparian areas, wildlife and fish migration corridors, native plant nursery sites, waters of the United States, sensitive natural communities, and other habitats designated by State and Federal agencies.

Policy COS 3-2: Preserve and enhance those biological communities that contribute to Brentwood's and the region's biodiversity including, but not limited to, wetlands, riparian areas, aquatic habitat, and agricultural lands.

Policy COS 3-3: Focus conservation efforts on high priority conservation areas that contain suitable habitat for endangered, threatened, migratory, or special-status species and that can be managed with minimal interference with nearby urban land uses.

Policy COS 3-4: Conserve existing native vegetation where possible and integrate regionally native plant species into development and infrastructure projects where appropriate.

Policy COS 3-5: Avoid removal of large, mature trees that provide wildlife habitat or contribute to the visual quality of the environment to the greatest extent feasible through appropriate project design and building siting. If full avoidance is not possible, prioritize planting of replacement trees on-site over off-site locations.

Policy COS 4-1: Where feasible, protect and enhance surface water quality in creeks, streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat, and vernal pools through sound land use planning, community design, and site planning.

Policy COS 4-2: Rehabilitate existing channelized waterways, as feasible, to remove concrete linings and allow for a connection with the stream channel and the natural water table. Avoid creating additional channelized waterways, unless no other alternative is available to protect human health, safety, and welfare.

Policy COS 4-3: Where feasible, restore existing channelized waterways to a more natural condition. Restoration efforts should provide for naturalized hydraulic functioning. Restoration should also promote the growth of riparian vegetation to effectively stabilize banks, screen pollutants from runoff entering the channel, enhance fisheries, and provide other opportunities for natural habitat restoration.

Policy COS 4-4: Require discretionary projects, as well as new flood control and storm water conveyance projects, to integrate best management practices and natural features to the greatest extent feasible, while ensuring that these features adequately convey and control storm water to protect human health, safety, and welfare.

Policy COS 4-5: Encourage the use of natural features such as bio swales, vegetation, retention ponds, and other measures to remove storm water pollutants prior to discharge, subject to State regulations.

Policy COS 4-6: Where feasible, new development adjacent to creeks and streams should include opportunities for beneficial uses, such as flood control, ecological restoration, public access trails, and walkways.

Policy COS 4-7: Consult with State and Federal agencies during the development review process to help identify wetland and riparian habitat that has candidacy for restoration, conservation, and/or mitigation. Focus restoration and/or conservation efforts on areas that would maximize multiple beneficial uses for such habitat.

Policy COS 4-8: Conserve riparian habitat along local creeks, including but not limited to Marsh Creek, Deer Creek, Dry Creek, and Sand Creek, in order to maintain water quality and provide suitable habitat for native fish and plant species.

Policy COS 4-9: Consider the effects of development on ground and surface water quality, and implement measures to reduce water contamination.

Policy COS 4-10: Where feasible, encourage and support multipurpose detention basins that provide water quality protection, storm water detention, open space amenities, and recreational amenities.

Policy COS 9-9: Encourage and support the use of drought-tolerant and regionally native plants in landscaping.

ACTIONS

Action COS 1a: Review all development proposals involving unincorporated land within the jurisdiction of Contra Costa County, and within or adjacent to the Sphere of Influence or Planning Area, to ensure adequate preservation of community separators and open space resources.

Action COS 1b: Adopt an ordinance that specifies standards and responsibilities for the maintenance of private open space lands within the city limits. The standards should include provisions for public access, habitat management, water quality protection, safety, and aesthetics.

Action COS 1c: Implement a coordinated and cost-effective plan for City management and maintenance of publicly-owned open space within the city limits.

Action COS 3a: Require new development, as well as infrastructure projects, long-range planning projects, and other projects, to comply with the requirements of the East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan to ensure that potentially significant impacts to special-status species and sensitive resources are adequately addressed

Action COS 3b: Where sensitive biological habitats have been identified on or immediately adjacent to a project site, the project shall include appropriate mitigation measures identified by a qualified biologist.

Action COS 4b: Continue to identify which storm water and drainage facilities are in need of repair and address these needs through the City's Capital Improvement Program.

Action COS 4c: Utilize existing regulations and procedures, including but not limited to, the Zoning Ordinance and the environmental review process, in order to conserve wetlands and riparian habitat within the city limits and the Planning Area.

Action COS 4d: Coordinate with the California Department of Fish and Wildlife, Contra Costa County, and local watershed protection groups to identify potentially impacted aquatic habitat within Brentwood's Planning Area and to develop riparian management guidelines to be implemented by development, recreation, and other projects adjacent to creeks, streams, and other waterways.

Action COS 4e: Continue to implement, and periodically review/update as necessary, Chapter 15.52 (Grading, Erosion and Sediment Control) of the Brentwood Municipal Code. The City shall review projects to ensure that best management practices are implemented during construction and site grading activities, as well as in project design to reduce pollutant runoff into water bodies.

Action COS 4f: Explore revising Title 17 (Zoning) of the Brentwood Municipal Code to include standards for creek setbacks and the protection of riparian habitat along creek corridors. The standards should include minimum setback requirements, site design standards, and requirements for the ongoing maintenance of creek and riparian habitat on public and private lands.

Action COS 4g: Update the Creek Trails and Revegetation Master Plan. Solicit public input during the preparation of the update, and include outreach efforts to community organizations with knowledge of and interest in key issues associated with local creeks, trails, and habitat restoration.

Action COS 4h: Encourage volunteer-based programs that organize community creek restoration and/or clean-up events and provide public education regarding the benefits of city and regional water resources.

Action COS 4i: Provide a conservation page (or similar page) on the City's website that provides links to resource agencies (i.e., CDFW, USFWS, USACE, etc.) and provides information regarding local and regional conservation and environmental programs, to the extent that the City has readily available information.

Impact 3.4-5: The General Plan would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (Less than Significant)

The proposed project is a policy document, in which local policies are established. This EIR presents the numerous policies of the General Plan. The General Plan itself does not conflict with its policies. Subsequent development projects will be required to comply with the General Plan policies, as well as the Municipal Code. Implementation of the policies and actions listed below would ensure consistency with already established ordinances. This is a **less than significant** impact.

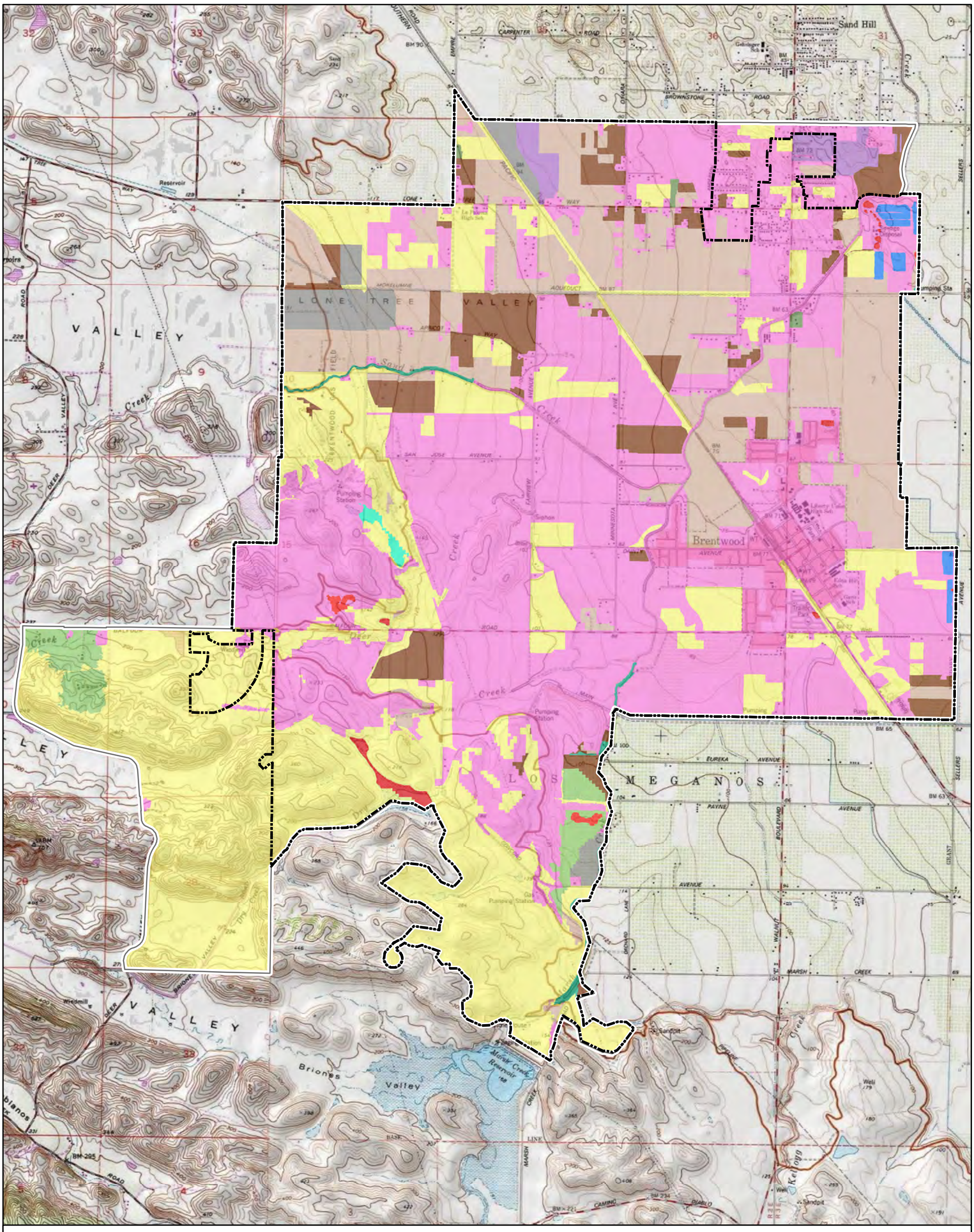
Impact 3.4-6: General Plan implementation would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan (Less than Significant)

The East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan (HCP/NCCP or Plan) is intended to provide regional conservation and development guidelines to protect natural resources while improving and streamlining the permit process for endangered species and wetland regulations. The Plan was developed by a team of scientists and planners with input from independent panels of science reviewers and stakeholders. Within the 174,018 acre inventory area, the Plan will provide permits for between 8,670 and 11,853 acres of development and will permit impacts on an additional 1,126 acres from rural infrastructure projects. The Preserve System to be acquired under the Plan will encompass 23,800 to 30,300 acres of land that will be managed for the benefit of 28 species as well as the natural communities that they, and hundreds of other species, depend upon. By proactively addressing the long-term conservation needs, the Plan strengthens local control over land use and provides greater flexibility in meeting other needs such as housing, transportation, and economic growth in the area. The City of Brentwood approved an ordinance in 2007 that requires future development projects to comply with the HCP/NCCP. Additionally, Action COS 3a from the Conservation and Open Space Element of the General Plan requires new development, as well as infrastructure projects, long-range planning projects, and other projects, to comply with the requirements of the Plan to ensure that potentially significant impacts to special status species and sensitive resources are adequately addressed. Implementation of the General Plan would not conflict with the provisions of an adopted HCP/NCCP, or other approved local, regional, or State habitat conservation plan. The General Plan would have a **less than significant** impact relative to this topic.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

ACTIONS

Action COS 3a: Require new development, as well as infrastructure projects, long-range planning projects, and other projects, to comply with the requirements of the East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan to ensure that potentially significant impacts to special-status species and sensitive resources are adequately addressed.



Water
Annual Grassland
Barren
Cropland
Deciduous Orchard
Evergreen Orchard
Fresh Emergent Wetland
Lacustrine
Pasture
Riverine
Urban
Vineyard
Valley Foothill Riparian

City of Brentwood
Brentwood Sphere of Influence

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.4-1: Land Cover Types

0 2,000 4,000
Feet

Data sources: USDA Forest Service, Pacific Southwest Region CalVeg; USGS Topo - National Geographic, iCubed, 2011. City of Brentwood GIS. Map date: February 19, 2013.

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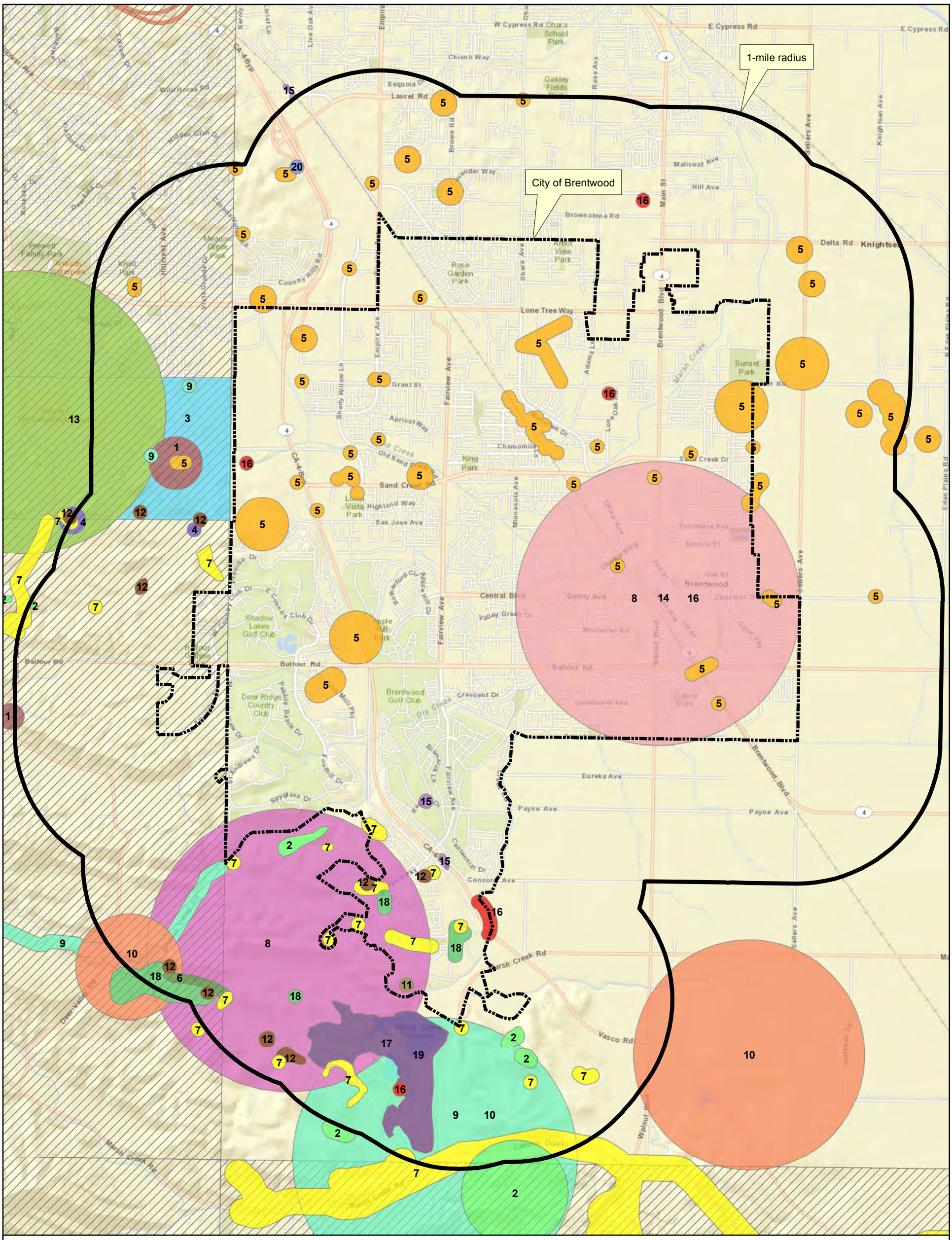

1 - American badger
2 - big tarplant
3 - Brewer's western flax
4 - brittlescale
5 - burrowing owl
6 - California linderiella
7 - California tiger salamander
8 - molestan blister beetle
9 - round-leaved filaree
10 - San Joaquin kit fox
11 - San Joaquin pocket mouse
12 - San Joaquin spearscale
13 - showy golden madia
14 - silvery legless lizard
15 - stinkbells
16 - Swainson's hawk
17 - tricolored blackbird
18 - vernal pool fairy shrimp
19 - western pond turtle
20 - white-tailed kite

Sensitive EOs
Alameda whipsnake
California red-legged frog
California tiger salamander
longhorn fairy shrimp
prairie falcon

Data sources: California Natural Diversity Database, Biogeographic Data Branch, Department of Fish and Game, 2/2/2013; City of Brentwood GIS; Contra Costa County GIS. Map date: February 14, 2013.

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.4-2: CNDDB Map - 1-mile Radius

0 0.5 1
Miles

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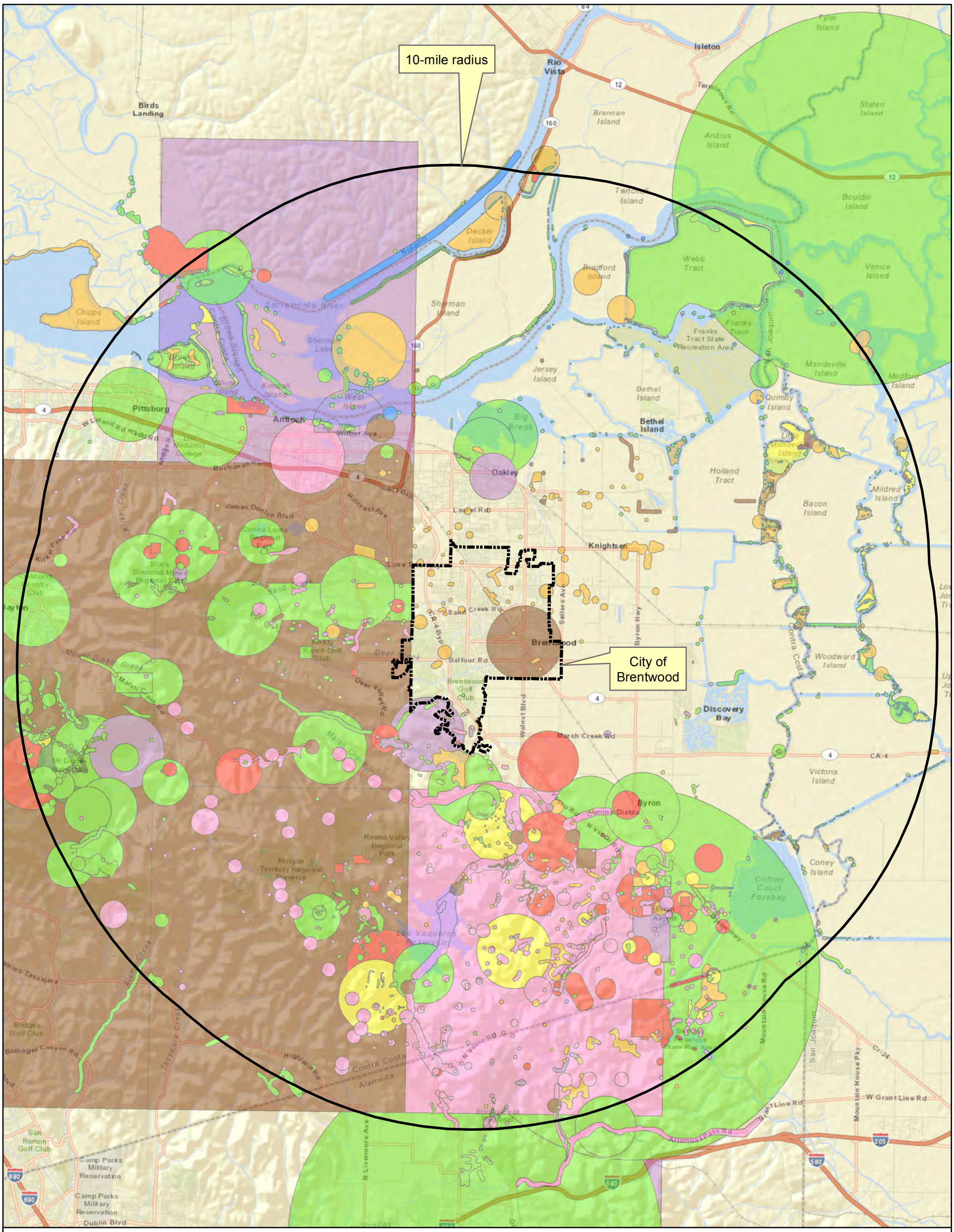

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.4-3: CNDDB - 10-mile Radius

Data sources: California Natural Diversity Database, Biogeographic Data Branch, Department of Fish and Game, 2/2/2013; City of Brentwood GIS; Contra Costa County GIS. Map date: February 12, 2013.

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Cultural resources are defined as buildings, sites, structures, or objects that may have historical, architectural, archaeological, cultural, or scientific importance. Preservation of the city's cultural heritage should be considered when planning for the future.

This section provides a background discussion of the prehistory, ethnology, historical period background, and cultural resources found in Brentwood. This section is organized with an existing setting, regulatory setting, and impact analysis. No comments regarding cultural resources were received during the Notice of Preparation scoping period for the EIR.

Key Terms

Archaeology. The study of historic or prehistoric peoples and their cultures by analysis of their artifacts and monuments.

Paleontology. The science of the forms of life existing in former geologic periods, as represented by their fossils.

Ethnography. The study of contemporary human cultures.

Complex. A patterned grouping of similar artifact assemblages from two or more sites, presumed to represent an archaeological culture.

Midden. A deposit marking a former habitation site and containing such materials as discarded artifacts, bone and shell fragments, food refuse, charcoal, ash, rock, human remains, structural remnants, and other cultural leavings.

3.5.1 ENVIRONMENTAL SETTING

PREHISTORY

Between 1893 and 1901, J.A. Barr (an avocational archeologist) excavated many prehistoric mounds in the Stockton area. He collected nearly 2,000 artifacts during the course of his uncontrolled digging. H.C. Meredith was another avocational, who also pursued collecting in the same Stockton locality. Meredith (1899, 1900) did publish a compilation of his own and Barr's findings, and these appear to constitute the earliest accounts of Delta "archeology." Holmes (1902), from the Smithsonian Institution, further elaborated on the Delta or Stockton District archeology and presented illustrations of artifacts collected by Meredith and Barr. It was Elmer J. Dawson who first recognized that there had been cultural changes through time in the northern San Joaquin Valley locale. Although he was also an avocationalist, Dawson understood the necessity of keeping accurate notes on grave associations and provenience of artifacts. He collaborated with W.E. Schenck to produce an overview of northern San Joaquin Valley archeology (Schenck and Dawson 1929). The overview contained information on over 90 prehistoric sites as well as data on all previous collectors.

In 1939, Lillard, Heizer, and Fenenga presented the concept of a tripartite or three-horizon cultural sequence, with a fourth horizon representing the historic or post-contact period. The sequence was based on discrete changes in ornamental artifacts, projectile point types, other tool forms, mortuary

practices, and on observed differences in soils within the sites. The authors did not attempt to assign dates to the three horizons, but they did discuss the progressive degree of bone mineralization from the Late to the Early Horizon. They also directed attention to the increased soil induration in the same order as the three Horizons -- Early Horizon, 2500 B.C.; Middle Horizon, 1500 B.C.; and Late Horizon, A.D. 500. They based their argument on an assessment of artifactual cross-dating, soil development, and stratigraphy.

Beardsley (1954) later refined the sequence, as have other investigators concerned with the prehistory of the region. Beardsley's revisions of the Delta sequence extended this system to include the San Francisco Bay region. Other studies by Heizer (1949) and Ragir (1972) focused on an elaboration and refinement of the Early Horizon. The Middle Horizon and the Late Horizon unfortunately have not been as well defined. Ragir (1972) proposed to substitute alternative designations: Windmiller Culture for Early Horizon, Cosumnes Culture for Middle Horizon, and Hotchkiss Culture for the Late Horizon. She argued that these new designations provided a more flexible system to accommodate new developments that might be discovered.

The Cosumnes Culture (Middle Horizon) displays considerable changes from the preceding cultural expression. The burial mode is predominately flexed, with variable cardinal orientation and with some cremations present. A lower percentage of burials with grave goods, with ochre staining common in graves, *Olivella* beads of types C1, F, and G, abundant use of green *Haliotis sp.* rather than red *Haliotis sp.*, perforated canid teeth, asymmetrical and "fishtail" charmstones that are usually unperforated. Other diagnostic features include cobble mortars and evidence of wooden mortars, extensive use of bone for tools and ornaments, large projectile points with considerable use of rock other than obsidian, and use of baked clay.

For Hotchkiss Culture (Late Horizon), the burial pattern retains the use of the flexed mode, and there is widespread evidence of cremation, lesser use of red ochre, heavy use of baked clay, *Olivella* beads of types E and M, extensive use of *Haliotis* ornaments of many elaborate shapes and forms, shaped mortars and cylindrical pestles, bird bond tubes with elaborate geometric designs, and clam shell disc beads. Other traits include small projectile points that indicate the introduction of the bow and arrow, flanged tubular pipes of steatite and schist, and use of magnesite (Moratto 1984:181-183). The characteristics noted are not all inclusive, but cover the more important traits.

The Windmiller Culture (Early Horizon) is characterized by ventrally-extended burials (some dorsal extensions are known), with westerly orientation of heads, a high percentage of burials with grave goods, frequent presence of red ochre in graves, large projectile points (of which 60 percent are of materials other than obsidian), rectangular *Haliotis* beads, *Olivella* shell beads (types A1a and L), rare use of bone, some use of baked clay objects, and well-fashioned charmstones, usually perforated.

Recent excavations conducted at prehistoric period occupation sites located near the Marsh Home defined four temporal components beginning at roughly 7,000 BP and concluding at approximately 3,100 BP (Wiberg et al. 2010). The Cowell Ranch/John Marsh Home State Historic Park includes the residence John Marsh built in 1856.

ETHNOLOGY

Bay Miwok

Linguistic data suggest that the Miwok have resided in the delta of the Sacramento and San Joaquin rivers for approximately 2,500 years. The Bay Miwok occupied an area south of the Sacramento River, including portions of Contra Costa County east of present-day Walnut Creek. The Julpun lived along the south bank of the San Joaquin River and on Sherman Island. Schenck (1926:136-137) suggested that the Julpun extended their territory northward at the time of contact in response to pressures in their own territory. The Chupcan lived west of the Julpun near present-day Antioch and probably bordered the Bolbon near Mount Diablo. The Bolbon or Wolwon lived along upper Marsh Creek near Mount Diablo (Bennyhoff 1977; Levy 1978:398-399). The pre-contact population of these Bay Miwok groups was undoubtedly greater than the 319 persons counted in mission baptismal records. In 1776, for instance, Anza's expedition visited a village near Antioch, presumably Chupcan, with a population estimated at 400 persons. This report implies that only 25 percent of the villagers were baptized. If the same proportion held true for other Bay Miwok villages, these three groups probably numbered about 1,275 persons before contact (Levy 1978:399; Merriam 1955:220).

Bay Miwok, like the Costanoans, situated their villages on elevations above the seasonal marshes. Father Viader described the summer flooding of the rivers and said that "at that time the wild Indians live on a few small elevations" (Cook 1960:259). Cook categorized these elevations as two types:

> (1) small, scattered mounds formed of residual calcareous sand (the so-called “sand mounds”) on the summits of which the Indians established their villages; and
>
> (2) true habitation mounds, perhaps originally situated on a slight elevation, but built up by midden deposit to a height of several feet [Cook 1960:285].

Large, multilineage villages situated along waterways were occupied throughout the year except during the autumn acorn harvest. Single extended families occupied domed houses that were covered with tule mats and grass thatch. Wealthy men sometimes built semi-subterranean lodges. The Miwok also constructed assembly houses in the major villages and round, earth-covered semi-subterranean sweathouses used by men.

The Delta environment provided abundant food sources for the Miwok, including grasses, berries, and other plants, fish, and waterfowl, and herds of elk and deer. The Miwok used many of the same species as did the Costanoans. Their economy was based primarily on gathering plant foods. Fishing and hunting waterfowl and mammals were subsidiary subsistence activities. The Miwok relied on the acorn as a staple in their diet. Valley oak (*Quercus lobata*) yielded large crops, and the Miwok presumably gathered other acorn varieties as well. Women ground the acorns into a meal that they cooked as a gruel. The Bay Miwok supplemented this food by collecting seeds, nuts,

roots, berries, and greens. The Miwok organized communal activities, such as hunting drives and fishing with nets and weirs (Bennyhoff 1977:10-11). Salmon were seasonally plentiful, and Viader observed Indians with large catches of fish (Cook 1960:258). Individual hunting skill may have been weakly developed. Although the Miwok used sinew-back bows and a variety of arrows, they often chose to run down their game and, after contact, many found it easier to steal horses and cattle than to rely on hunting game. Birds, rodents, and other small mammals apparently took a place in the Miwok diet more consistently than did deer, elk, or antelope (Bennyhoff 1977:10-11).

The Miwok manufactured many specialized tools and utilitarian implements for subsistence activities, and they also excelled in crafting artistically-decorated baskets, ornaments, clothing, and ceremonial items. Men made baked clay net weights that were used for bird hunting and fishing, tule duck decoys, and ceremonial baked clay effigies. They created shell ornaments and bone ear decorations and feather-belts for the women. Men also made string and cords for nets and wove feather-cloaks and rabbit-skin blankets. Women twined and coiled baskets that they decorated with quail plumes and beads, and they also fashioned plainer basket utensils, tule mats, cradles, waist aprons, and clay cooking stones (Bennyhoff 1977:11).

Religious ceremonies and rituals marked birth, puberty, and marriage. Ceremonies for the dead were the most elaborate observances. The Miwok ornamented the corpse and wrapped it in a tule mat. Common people buried their dead simply, while wealthy families set the corpse on fire and then burned baskets and other mortuary gifts before the grave was filled. Guests feasted and engaged in ritual gift exchange and public displays of grief. The Miwok burned a house when its owner died, and burned or abandoned a village when its headman died (Bennyhoff 1977:15).

In 1774, the first Bay Miwok converts were recorded at Mission San Francisco, although most of the Bay Miwok neophytes were taken to Mission San Jose. Some of those who escaped the rigid life at the missions hid in the tule marshes and sought protection from extant villages; but Spanish expeditions used military force to recapture runaways and discourage the villagers from harboring fugitives (Cook 1960:258-259). The last Bay Miwok baptisms were recorded in 1827. Subsequently, the original tribal groups lost their identity, it has been suggested, by joining more distant tribelets or because they were decimated by disease (Bennyhoff 1977:23; Levy 1978:400).

The Bay Miwok village site of *Bolbon* was located on the southeast flanks of Mount Diablo, about three miles south of the Planning Area. From 1803 to 1813, 67 Miwok were recorded to have been baptized by the padres at the village (Levy 1978: Figure 1; 399). The village name, *Bolbones* was assigned to the local Bay Miwok tribe and triblets in the general Project area.

HISTORIC PERIOD BACKGROUND

The discovery of the Carquinez Straits and exploration of Contra Costa County was accomplished by Pedro Fages, who toured the county with twelve soldiers, an Indian guide, and Father Juan Crespí in the spring of 1772 (Bancroft 1882). This expedition was followed in 1776 by a party led by Captain Juan Bautista de Anza that generally followed along the same route from San Francisco Bay to the Carquinez Straits, continued toward the interior and passed somewhere east of Mt.

Diablo (Beck and Haase 1974:17). Fages made a notation in his journal regarding the salt springs near Byron.

One of the early residents of the area was an American-born Yankee. John Marsh was born in 1799 in Massachusetts and received a bachelor's degree from Harvard in 1823. After graduation he studied with a local doctor before moving west to the Michigan Territory (now Minnesota) where he opened the first school in that area and became an Indian Agent for the local Sioux. He had a child, Charles, with a local woman of French and Indian ancestry. While residing in Prairie du Chien, Wisconsin, Marsh became involved with a dispute among the local tribes and was forced to flee the area with his wife and small child.

He and his family settled in New Salem Illinois, but Marsh soon returned to Prairie du Chien, leaving his wife and son behind. Apparently the separation was too great and his wife, pregnant with his second child tried to follow Marsh but died during the journey. His son, Charles, survived and Marsh placed him with a family in New Salem to be raised. Marsh once again became involved with the local tribes and was accused of selling weapons to one of the factions and fled to Independence, Missouri where he tried his hand as a merchant.

After seeing his son one more time, and after his business failed, Marsh moved to Santa Fe to work for the American Fur Company in 1836. Soon afterwards he migrated to the small settlement at Los Angeles. Although his degree from Harvard was not in medicine, he implied such when he presented it to the local Mexican authorities, who could not translate Latin and granted him, erroneously, the right to practice medicine in the territory. He is credited as the first person to practice medicine in the Los Angeles area and was also known for charging high fees for his services.

By 1837 he had made enough enemies in the Los Angeles community that he decided to move north where he obtained, in 1838, the Rancho Los Meganos land grant from Jose Noriega. Along the banks of the creek later named in his honor he erected an adobe home, raised cattle and continued to practice medicine. He played an important role in the Bear Flag Revolt that led to eventual statehood for California.

Failing to find his son Charles, Marsh married a school teacher, Abigail, in 1851, and a year later she bore him a daughter, Alice. Marsh began construction of a large stone residence a short distance downstream from his adobe. Unfortunately, the home was not yet completed when Abigail died, and Marsh himself only lived in the building for three weeks until he met his death at the hands of disgruntled ranch hands near Martinez.

Shortly before his murder, it is believed that his son Charles apparently had finally tracked his father down and showed up on his doorstep during a storm. Charles was involved in helping chase his father's killers down, so there probably was some brief period between the death of his wife Abigail and Marsh's murder when the two were reunited.

Charles and his half sister Alice inherited the recently completed stone home, and associated property. Charles even got caught up in the brief coal mining boom opening a mine in the hills west of his home in 1867. Within five years, financial problems led Charles to sell the mine to Jack Williams, who with Stanford family funding, planned major expansions.

The future community of Brentwood had already grown tremendously since the mine opened in 1867. The Brentwood Coal Company was headed up by a man named Williams who planned to construct a railroad spur to Marsh Landing and to expand facilities. Williams built a deep water wharf at Marsh Landing, constructed homes for mine workers, hired mining engineers and ordered equipment, and then it was discovered that the coal vein at the mine was inferior quality, too narrow and too deep. Williams fled the area and sold off the land of the former Marsh estate, but not before apparently naming the town and mine after the town of Brentwood, New York, a state where the mining company officials had originated from. An alternate naming theory involves John Marsh's ancestral home town in England, or perhaps after the community of Brentwood in Massachusetts, near the birthplace of John Marsh (Jensen 2008:8).

By 1877, the community of Brentwood was thriving, and by 1900, had a population of 200. Brentwood was formally incorporated in 1948 (Jensen 2008:8). The community of Byron, located about four miles southeast of Brentwood along the Atchison, Topeka & Sante Fe Railroad line, was large enough to support a local post office by 1878. Byron, like many new railroad-related towns, was named after an employee of the railroad (Durham 1998:609).

Byron's place in the local economy was tied in part to its neighbor to the south, Byron Hot Springs. The springs themselves had long been utilized as a source of salt. In 1863, the Saline Salt Mining and Saline Company was founded to exploit the springs, but the lack of cheap transportation doomed the endeavor. Soon, the increasing number of campers who came to bathe in the 80 to 100 degree water, gave the owners an idea. Bath houses were built over several of the springs, and overnight accommodations were set up to accommodate money-generating visitors.

By 1878 a large wooden hotel had been built and in 1885, soil was imported to cover the former salt flat and plant a tropical garden. In 1902 fire destroyed the building. In 1912, a second fire destroyed the resort that was constructed after the 1902 fire. In 1914, a four story brick structure was constructed that still exists at the site today. In the early 1920s the resort was leased to a Bay Area restaurateur, John Tait, who promoted the resort as a get-away destination for many sports and Hollywood celebrities. An 18-hole golf course was added, and apparently the Prohibition-era crowd had whiskey supplied by none other than the Kennedy family. Legendary baseball player "Lefty" O'Doul claimed that the therapeutic mud helped him pitch extra innings, and Clark Gable apparently spent some time at the spa with a daughter of the Speckles Sugar family.

During World War II, Byron Hot Springs became one of two U.S. Army Intelligence interrogation camps in the U.S. The so called "Camp Tracy" was home to a selected group of prisoners of war who the Army felt might have intelligence value. During 1944 alone, 921 Japanese and 645 Germans were interrogated at the camp, apparently in groups of fifty or less. After the war, the Greek Orthodox Church obtained the property and ran the establishment as a resort for parishioners. In 1965, ownership was transferred to private hands and the title has been transferred many times since. The complex is currently abandoned, but the community of Byron continues to thrive, with a 2010 population of approximately 1,277 residents.

CULTURAL RESOURCES IN THE BRENTWOOD PLANNING AREA

Seventy-seven cultural resources have been identified within the Planning Area, according to files maintained by the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS). The seventy-seven recorded cultural resources span both the prehistoric and historic periods and range from Native American village sites to historic period farms and ranches. Most of the previous investigations by archeologists were focused on the Los Vaqueros Watershed Project and individual land parcels prior to development.

A number of public and privately-owned buildings within the Planning Area have been identified on the Contra Costa County Historic Property Data File Directory.

TABLE 3.5-1: BUILDINGS LISTED ON THE CONTRA COSTA COUNTY HISTORIC PROPERTY DATA FILE DIRECTORY

PROPERTY #	ADDRESS	YEAR BUILT	NAME
010015	600 1st Street, Brentwood	Not listed	Jewett House
067123	538 2nd Street, Brentwood	Not listed	Not Listed
151331	929 2nd Street, Brentwood	1923	Liberty Union High School
010009	Cypress Road, Brentwood	1850	Iron House School
132949	615 Indiana Ave., Brentwood	1931	Not Listed
10010	Marsh Creek Road, Brentwood	1870	Geddes House
10011	300 Oak Street, Brentwood	1890	Judge Walkers Chambers
134263	359 Peachtree Court, Brentwood	1930	Not Listed
10012	Railroad Avenue, Brentwood	1909	Murphy House
10013	828 Railroad Avenue, Brentwood	1909	Wallace Home
119709	Sellers Avenue, Brentwood	1900	Railroad Building
10014	State Route 4, Brentwood	1850	Coats Hall
119707	Sunset Road, Brentwood	1940	Brentwood WWTP
132946	3787 Walnut Blvd., Brentwood	1925	Not Listed
132952	3841 Walnut Blvd., Brentwood	1934	Not Listed
132953	3855 Walnut Blvd., Brentwood	1940	Not Listed
132954	3859 Walnut Blvd., Brentwood	1940	Not Listed
167415	State Route 4, Brentwood	1894	Victoria Canal
183361	Not Listed	1946	Not Listed
10024	Brentwood Avenue, Byron	1867	McCabe House
10022	Byer Road, Byron	Not Listed	Fry House
10021	3275 Byer Road, Byron	1860	Byers House
10017	3667 Byron Highway, Byron	Not Listed	Byron Methodist Church
10018	3671 Byron Highway, Byron	1850	Byron Methodist Church Parish House

SOURCE: CONTRA COSTA COUNTY HISTORIC PROPERTY DATA FILE DIRECTORY

TABLE 3.5-2: ADDITIONAL BUILDINGS LISTED ON THE CALIFORNIA INVENTORY OF HISTORIC RESOURCES (1976)	
LOCATION	NAME
Byron	Darby House Site
Byron	Hoffman House
Brentwood	Liberty Grammar School
Byron	John Marsh House
Brentwood	Preston House
Brentwood (vicinity)	Darby House Site
Byron (vicinity)	Hoffman House

SOURCE: CALIFORNIA INVENTORY OF HISTORIC RESOURCES (1976)

TABLE 3.5-3: ADDITIONAL RESOURCES LISTED IN THE REVISED PRELIMINARY HISTORIC RESOURCES INVENTORY, CONTRA COSTA COUNTY (1989)	
LOCATION	NAME
Brentwood	"Arbor"
Byron	Fry House

SOURCE: REVISED PRELIMINARY HISTORIC RESOURCES INVENTORY, CONTRA COSTA COUNTY (1989)

NATIVE AMERICAN CONSULTATION

Letters were sent to: the Native American Heritage Commission; Ms. Jean-Marie Feyling, Amah/Mutsun Tribal Band; Ms. Jakki Kehl; Ms. Irene Zwierlein, Chairperson, Amah/Mutsun Tribal Band; Ms. Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Coastanoan; Mr. Andrew Galvin, The Ohlone Indian Tribe; Ms. Ramona Garibay, Representative, Trina Marine Ruano Family; Ms. Katherine Erolinda Perez; Ms. Linda G. Yamane; Ms. Rosemary Cambra Chairperson, Muwekma Ohlone Indian Tribe of the SF Bay Area; Contra Costa County Historical Society; East Contra Costa Historical Society & Museum; and, Contra Costa County Genealogical Society to request information regarding the General Plan Planning Area. The Native American Heritage Commission responded with a letter dated February 20, 2013 indicating that they had no specific information regarding cultural resources within the General Plan Planning Area.

PALEONTOLOGICAL RESOURCES

Among the natural resources deserving conservation and preservation, and existing within the update Study Area, are the often unseen records of past life buried in the sediments and rocks below the pavement, buildings, soils, and vegetation which now cover most of the area. These records – fossils and their geologic context – undoubtedly exist in large quantities below the surface in many areas in and near the City of Brentwood, and span millions of years in age of origin. Fossils constitute a non-renewable resource: Once lost or destroyed, the exact information they contained can never be reproduced.

Paleontology is the science that attempts to unravel the meaning of these fossils in terms of the organisms they represent, the ages and geographic distribution of those organisms, how they interacted in ancient ecosystems and responded to past climatic changes, and the changes through time of all of these aspects.

The sensitivity of a given area or body of sediment with respect to paleontologic resources is a function of both the potential for the existence of fossils and the predicted significance of any fossils which may be found there. The primary consideration in the determination of paleontologic sensitivity of a given area, body of sediment, or rock formation is its potential to include fossils. Information that can contribute to assessment of this potential includes: 1) direct observation of fossils within the project area; 2) the existence of known fossil localities or documented absence of fossils in the same geologic unit (e.g., "Formation" or one of its subunits); 3) descriptive nature of sedimentary deposits (such as size of included particles or clasts, color, and bedding type) in the area of interest compared with those of similar deposits known elsewhere to favor or disfavor inclusion of fossils; and 4) interpretation of sediment details and known geologic history of the sedimentary body of interest in terms of the ancient environments in which they were deposited, followed by assessment of the favorability of those environments for the preservation of fossils.

A Paleontological Evaluation Report was prepared for the City of Brentwood General Plan Area by Bruce Hansen, PhD, Paleontologist. The evaluation report presents an assessment of the probable existence, sensitivity, and distribution of significant paleontologic resources within the Brentwood General Plan Update study area. The report includes information and conclusions drawn from investigations of published geologic and paleontologic literature and unpublished museum records relevant to an assessment of potential paleontologic resources within and near the designated areas of the city. Paleontologic resources include fossils – the remains or traces of once-living organisms preserved in sediments or sedimentary rocks – and the geologic context in which they occur. By convention, paleontologic resources do not include human remains, artifacts (objects created by humans), or other evidence of past human activities, the subjects of the field of archeology.

There are no known significant fossil deposits in the Planning Area. However, the geologic conditions within the Planning Area provide suitable conditions for the possibility of fossils to exist at depths of five to 10 feet below ground surface.

3.5.2 REGULATORY SETTING

FEDERAL REGULATIONS

National Historic Preservation Act

Most regulations at the Federal level stem from the National Environmental Policy Act (NEPA) and historic preservation legislation such as the National Historic Preservation Act (NHPA) of 1966, as amended. NHPA established guidelines to "preserve important historic, cultural, and natural aspects of our national heritage, and to maintain, wherever possible, an environment that supports diversity and a variety of individual choice." The NHPA includes regulations specifically for Federal land-holding agencies, but also includes regulations (Section 106) which pertain to all

projects that are funded, permitted, or approved by any Federal agency and which have the potential to affect cultural resources. All projects that are subject to NEPA are also subject to compliance with Section 106 of the NHPA and NEPA requirements concerning cultural resources. Provisions of NHPA establish a National Register of Historic Places (The National Register) maintained by the National Park Service, the Advisory Councils on Historic Preservation, State Historic Preservation Offices, and grants-in-aid programs.

American Indian Religious Freedom Act and Native American Graves and Repatriation Act

The American Indian Religious Freedom Act recognizes that Native American religious practices, sacred sites, and sacred objects have not been properly protected under other statutes. It establishes as national policy that traditional practices and beliefs, sites (including right of access), and the use of sacred objects shall be protected and preserved. Additionally, Native American remains are protected by the Native American Graves and Repatriation Act of 1990.

Other Federal Legislation

Historic preservation legislation was initiated by the Antiquities Act of 1966, which aimed to protect important historic and archaeological sites. It established a system of permits for conducting archaeological studies on federal land, as well as setting penalties for noncompliance. This permit process controls the disturbance of archaeological sites on federal land. New permits are currently issued under the Archaeological Resources Protection Act (ARPA) of 1979. The purpose of ARPA is to enhance preservation and protection of archaeological resources on public and Native American lands. The Historic Sites Act of 1935 declared that it is national policy to "Preserve for public use historic sites, buildings, and objects of national significance."

STATE REGULATIONS

California Register of Historic Resources (CRHR)

California State law also provides for the protection of cultural resources by requiring evaluations of the significance of prehistoric and historic resources identified in documents prepared pursuant to the California Environmental Quality Act (CEQA). Under CEQA, a cultural resource is considered an important historical resource if it meets any of the criteria found in Section 15064.5(a) of the CEQA Guidelines. Criteria identified in the CEQA Guidelines are similar to those described under the NHPA. The State Historic Preservation Office (SHPO) maintains the CRHR. Historic properties listed, or formally designated for eligibility to be listed, on The National Register are automatically listed on the CRHR. State Landmarks and Points of Interest are also automatically listed. The CRHR can also include properties designated under local preservation ordinances or identified through local historical resource surveys.

California Environmental Quality Act (CEQA)

CEQA requires that lead agencies determine whether projects may have a significant effect on archaeological and historical resources. This determination applies to those resources which meet

significance criteria qualifying them as "unique," "important," listed on the California Register of Historical Resources (CRHR), or eligible for listing on the CRHR. If the agency determines that a project may have a significant effect on a significant resource, the project is determined to have a significant effect on the environment, and these effects must be addressed. If a cultural resource is found not to be significant under the qualifying criteria, it need not be considered further in the planning process.

CEQA emphasizes avoidance of archaeological and historical resources as the preferred means of reducing potential significant environmental effects resulting from projects. If avoidance is not feasible, an excavation program or some other form of mitigation must be developed to mitigate the impacts. In order to adequately address the level of potential impacts, and thereby design appropriate mitigation measures, the significance and nature of the cultural resources must be determined. The following are steps typically taken to assess and mitigate potential impacts to cultural resources for the purposes of CEQA:

- identify cultural resources;
- evaluate the significance of the cultural resources found;
- evaluate the effects of the project on cultural resources; and
- develop and implement measures to mitigate the effects of the project on cultural resources that would be significantly affected.

California Public Resources Code

Section 5097 of the Public Resources Code specifies the procedures to be followed in the event of the unexpected discovery of historic, archaeological, and paleontological resources, including human remains, historic or prehistoric resources, paleontological resources on nonfederal land. The disposition of Native American burial falls within the jurisdiction of the California Native American Heritage Commission (NAHC). Section 5097.5 of the Code states the following:

> *No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.*

California Health and Safety Code

Section 7050.5 of the California Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the county coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission. CEQA Guidelines (Section 15064.5) specify the procedures to be followed in case of the discovery of human remains on non-federal land. The disposition of Native American burials falls within the jurisdiction of the Native American Heritage Commission.

Senate Bill 18 (Burton, Chapter 905, Statutes 2004)

SB 18, authored by Senator John Burton and signed into law by Governor Arnold Schwarzenegger in September 2004, requires local (city and county) governments to consult with California Native American tribes to aid in the protection of traditional tribal cultural places ("cultural places") through local land use planning. This legislation, which amended §65040.2, §65092, §65351, §65352, and §65560, and added §65352.3, §653524, and §65562.5 to the Government Code; also requires the Governor's Office of Planning and Research (OPR) to include in the General Plan Guidelines advice to local governments for how to conduct these consultations. 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, for the purpose of protecting, or mitigating impacts to, cultural places. These consultation and notice requirements apply to adoption and amendment of both general plans (defined in Government Code §65300 et seq.) and specific plans (defined in Government Code §65450 et seq.).

Assembly Bill 978

In 2001, Assembly Bill (AB) 978 expanded the reach of Native American Graves Protection and Repatriation Act of 1990 and established a State commission with statutory powers to assure that Federal and State laws regarding the repatriation of Native American human remains and items of patrimony are fully complied with. In addition, AB 978 also included non-Federally recognized tribes for repatriation.

3.5.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project is considered to have a significant impact on cultural resources if it will:

- Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5;
- Cause a substantial adverse change in the significance of archaeological resource pursuant to CEQA Guidelines §15064.5;
- Directly or indirectly destroy a unique paleontological resource; or
- Disturb any human remains, including those interred outside of formal cemeteries.

IMPACTS AND MITIGATION MEASURES

Impact 3.5-1: General Plan implementation could result in a substantial adverse change in the significance of a historical or archaeological resource (Less than Significant)

A substantial adverse change in the significance of an historic resource is defined in Section 15064.5 (b)(1) of the CEQA Guidelines as the "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired." Known historic and prehistoric resource sites are located throughout Brentwood and the Planning Area, as shown in Tables 3.5-1 through 3.5-3, and it is expected that additional undiscovered sites may be located in various areas of the city as well.

While the General Plan does not directly propose any adverse changes to any historic or archaeological resources, future development allowed under the General Plan could affect known historical and archaeological resources or unknown historical and archaeological resources which have not yet been identified. Seventy-seven resources have been recorded within the Planning Area. Of these, 44 are prehistoric Native American archaeological sites or historic-period archaeological sites, and 33 are built environment resources. Details regarding the exact nature and location of archaeological resources are intentionally withheld from this EIR in order to help protect the integrity of these resources.

It has been generally held that prehistoric Native American sites are most likely to occur where several environmental factors combine to provide readily available resources, such as at the interface between valley and hills. As future development and infrastructure projects are considered by the City, each project will be evaluated for conformance with the City's General Plan, Municipal Code, and other applicable State and local regulations. Subsequent development and infrastructure projects would also be analyzed for potential environmental impacts, consistent with the requirements of CEQA. The Brentwood General Plan includes policies and actions that would reduce impacts to cultural, historic, and archaeological resources, as well as policies and actions for the conservation of cultural, historic, and archaeological resources.

Policies COS 6-7 and COS 6-9 encourage the protection and preservation of cultural and historic resources and consultation with Native American representatives to identify and appropriately address cultural resources and sacred sites during the development review process. Actions COS 6d and COS 6e address the discovery of significant archaeological and historic resources during construction and grading activities, requiring that development work be stopped in the event of a discovery and that appropriate measures be implemented to protect the resource. Policies COS 6-2 and COS 6-3 encourage the preservation and reuse of historic buildings and structures to maintain their historical significance.

Adoption and implementation of the policies and actions listed below would ensure that adverse effects on significant historic and archaeological resources are reduced to a **less than significant** level.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy COS 6-1: Protect important historic resources and use these resources to promote a sense of place and history in Brentwood.

Policy COS 6-2: Encourage the voluntary identification, conservation, and reuse of historical structures, properties, and sites with special and recognized historic, architectural, or aesthetic value.

Policy COS 6-3: Encourage historic resources to remain in their original use whenever possible. The adaptive use of historic resources is preferred, particularly as museums, educational facilities, or visitor-serving uses, when the original use can no longer be sustained. Older residences may be converted to office/retail use in commercial areas and to tourist or business use, so long as their historical authenticity is maintained or enhanced.

Policy COS 6-4: Leverage the City's strong cultural and historic heritage to support and encourage historically-oriented visitor programs and heritage tourism through cooperation with local, regional, and State marketing efforts.

Policy COS 6-5: Continue to support and promote annual festivals and community events that celebrate Brentwood's cultural heritage.

Policy COS 6-6: Encourage and support community art projects, including murals, sculptures, educational programs, and events that highlight Brentwood's cultural and historic heritage.

Policy COS 6-7: Review new development projects and work in conjunction with the California Historical Resources Information System to determine whether project areas contain known archaeological resources, either prehistoric and/or historic-era, or have the potential for such resources.

Policy COS 6-8: Ensure that human remains are treated with sensitivity and dignity, and ensure compliance with the provisions of California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98.

Policy COS 6-9: Consistent with State, local, and tribal intergovernmental consultation requirements such as SB 18, the City shall consult as necessary with Native American tribes that may be interested in proposed new development and land use policy changes.

ACTIONS

Action COS 6a: Explore the development of an historic Brentwood program to identify historic resources, encourage landowners to voluntarily preserve and rehabilitate historical structures, and provide a coordinated approach to draw visitors and tourists to these areas.

Action COS 6b: Develop guidelines for remodels of potentially historic residential structures to ensure that the character and individuality of such residences is maintained. The guidelines should address:

1. *Design styles, age of home, and other criteria to determine applicability of the guidelines.*

2. *Exterior features that are important and covered by the guidelines (e.g., siding and exterior finishes, windows, doors, roofs, porches, garages, outbuildings, and streetscapes).*

3. *Standards for modifications and renovation, including the extent of changes that can occur.*

4. *Activities that are exempt from the guidelines, such as interior improvements and routine maintenance and repair.*

Action COS 6c: Collaborate with the Chamber of Commerce and other interested community groups to support and promote community festivals and events.

Action COS 6d: Require a cultural and archaeological survey prior to approval of any project which would require excavation in an area that is sensitive for cultural or archaeological resources. If significant cultural or archaeological resources, including historic and prehistoric resources, are identified, appropriate measures shall be implemented, such as documentation and conservation, to reduce adverse impacts to the resource.

Action COS 6e: Require all new development, infrastructure, and other ground-disturbing projects to comply with the following conditions in the event of an inadvertent discovery of cultural resources or human remains:

1. *If construction or grading activities result in the discovery of significant historic or prehistoric archaeological artifacts or unique paleontological resources, all work within 100 feet of the discovery shall cease, the Community Development Director shall be notified, the resources shall be examined by a qualified archaeologist, paleontologist, or historian for appropriate protection and preservation measures; and work may only resume when appropriate protections are in place and have been approved by the Community Development Director.*

2. *If human remains are discovered during any ground disturbing activity, work shall stop until the Community Development Director and the Contra Costa County Coroner have been contacted; if the human remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) and the most likely descendants have been consulted; and work may only resume when appropriate measures have been taken and approved by the Community Development Director.*

Impact 3.5-2: Implementation of the General Plan could lead to the disturbance of human remains (Less than Significant)

Indications are that humans have occupied areas within the Brentwood Planning Area for at least 9,000 years and it is not always possible to predict where human remains may occur outside of formal burials. Therefore, excavation and construction activities allowed under the General Plan may yield human remains that may not be marked in formal burials.

As future development and infrastructure projects are considered by the City, each project will be evaluated for conformance with the City's General Plan, Municipal Code, and other applicable State and local regulations. Subsequent development and infrastructure projects would also be analyzed for potential environmental impacts, consistent with the requirements of CEQA. Under CEQA, human remains are protected under the definition of archaeological materials as being "any evidence of human activity." Public Resources Code Section 5097 has specific stop-work and notification procedures to follow in the event that Native American human remains are inadvertently discovered during development activities. The General Plan includes Policy COS 6-8, which requires that human remains are treated with sensitivity and dignity, and ensures compliance with the provisions of California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98. Action COS 6e includes specific provisions that must be enacted if human remains are inadvertently discovered during construction activities. Implementation of these policies and actions ensures that potential adverse impacts to human remains would be **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy COS 6-8: Ensure that human remains are treated with sensitivity and dignity, and ensure compliance with the provisions of California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98.

Actions

Action COS 6e: Require all development, infrastructure, and other ground-disturbing projects to comply with the following conditions in the event of an inadvertent discovery of cultural resources or human remains:

1. *If construction or grading activities result in the discovery of significant historic or prehistoric archaeological artifacts or unique paleontological resources, all work within 100 feet of the discovery shall cease, the Community Development Director shall be notified, the resources shall be examined by a qualified archaeologist, paleontologist, or historian for appropriate protection and preservation measures; and work may only resume when appropriate protections are in place and have been approved by the Community Development Director.*

2. *If human remains are discovered during any ground disturbing activity, work shall stop until the Community Development Director and the Contra Costa County Coroner have been contacted; if the human remains are determined to be of Native American origin,*

the Native American Heritage Commission (NAHC) and the most likely descendants have been consulted; and work may only resume when appropriate measures have been taken and approved by the Community Development Director.

Impact 3.5-3: General Plan implementation may result in damage to or the destruction of paleontological resources (Less than Significant)

There are no known paleontological resources located in the Brentwood Planning Area. However, development allowed under the General Plan could result in the discovery and disturbance of previously unknown or undiscovered paleontological resources. Geologic formations, including the Upper Cretaceous marine sedimentary rocks and various Quaternary subunits, that have a high to moderate potential for paleontological resources, are present throughout many areas in California. As future development and infrastructure projects are considered by the City, subsequent development and infrastructure would also be analyzed for potential environmental impacts, consistent with the requirements of CEQA. The General Plan provides guidance regarding the conservation of paleontological resources, ensuring that any unique paleontological resources discovered during implementation of the General Plan are conserved appropriately. The implementation of Action COS 6e, listed above, would ensure potential impacts to paleontological resources are reduced to **less than significant levels**.

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Geology is the science and study of the solid Earth and the processes by which it is shaped and changed. Modern geology is publicly important for predicting and understanding natural hazards, such as seismicity, erosion, and landslides, which each play an essential role in geotechnical engineering structures for safety, as well as mineral and energy resource availability.

This section provides a background discussion of the seismic and geologic hazards, and other geologic hazards and mineral resources found in the City of Brentwood and the regional vicinity. This section is organized with an existing setting, regulatory setting, and impact analysis.

3.6.1 ENVIRONMENTAL SETTING

Brentwood is located in eastern Contra Costa County, approximately 50 miles east of San Francisco and 50 miles southwest of Sacramento. Brentwood is situated in the western portion of the San Joaquin Valley, immediately east of the Diablo Range which forms the eastern boundary of the Coast Ranges.

The topography of the Planning Area is characterized by the relatively flat terrain typical of the Central Valley, with a few gently sloping hills in the southern and western portions of the Planning Area near the foothills of the Diablo Range. Elevations in Brentwood range from 25 feet above mean sea level (MSL) in the northeast portion of the city to 492 feet above MSL at the highest peak in the southwest portion of the city.

A series of east-west trending ridges and valleys extend eastward from the Diablo Range toward the San Joaquin Valley. Lone Tree Valley, Deer Valley, and Briones Valley form a set of drainage basins which collect seasonal rainwater and direct runoff into a network of small streams and creeks in Brentwood. Marsh Creek is the largest of the waterways within Brentwood. Sand Creek, Deer Creek, and Dry Creek flow into Marsh Creek. In the southern portion of Brentwood, Marsh Creek has been dammed to form Marsh Creek Reservoir. Marsh Creek continues north from the reservoir, passes through Brentwood, and extends north to the Creek's confluence with the San Joaquin River located in the city of Oakley.

GEOMORPHIC PROVINCE

California's geomorphic provinces are naturally defined geologic regions that display a distinct landscape or landform. Earth scientists recognize eleven provinces in California. Each region displays unique, defining features based on geology, faults, topographic relief, and climate. These geomorphic provinces are remarkably diverse. They provide spectacular vistas and unique opportunities to learn about Earth's geologic processes and history. The city of Brentwood lies at the boundary of the Great Valley and Coast Range Geomorphic Provinces.

The Great Valley is an alluvial plain about 50 miles wide and 400 miles long in the central part of California. Its northern part is the Sacramento Valley, drained by the Sacramento River, and its southern part is the San Joaquin Valley drained by the San Joaquin River. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic (about 160 million years ago). Great oil fields have been found in southernmost San Joaquin Valley and along

anticlinal uplifts on its southwestern margin. In the Sacramento Valley, the Sutter Buttes, the remnants of an isolated Pliocene volcano, rise above the valley floor.

The Coast Range is a northwest-trending mountain range (2,000 to 4,000, occasionally 6,000 feet elevation above sea level) and set of valleys. The ranges and valleys trend northwest, subparallel to the San Andreas Fault. Strata dip beneath alluvium of the Great Valley. To the west is the Pacific Ocean. The coastline is uplifted, terraced and wave-cut. The Coast Range is composed of thick Mesozoic and Cenozoic sedimentary strata. The northern and southern ranges are separated by a depression containing the San Francisco Bay. The northern Coast Ranges are dominated by irregular, knobby, landslide-topography of the Franciscan Complex. The eastern border is characterized by strike-ridges and valleys in Upper Mesozoic strata. In several areas, Franciscan rocks are overlain by volcanic cones and flows of the Quien Sabe, Sonoma, and Clear Lake volcanic fields. The Coast Ranges are subparallel to the active San Andreas Fault. The San Andreas is more than 600 miles long, extending from Pt. Arena to the Gulf of California. West of the San Andreas is the Salinian Block, a granitic core extending from the southern extremity of the Coast Ranges to the north of the Farallon Islands.

REGIONAL GEOLOGY

The geology of the region is to a large extent controlled by major active faults in the Coast Range to the west and the alluvial deposits and sediments from the Sacramento-San Joaquin River Delta to the north and east. The Planning Area is underlain by Upper Cretaceous marine sedimentary rocks, Eocene marine sedimentary rocks, and Quaternary Marine/Alluvium. The majority of the Planning Area is underlain by Quaternary Marine/Alluvium, which contains mostly nonmarine unconsolidated and semiconsolidated alluvium, lake, playa, and terrace deposits. Upper Cretaceous marine sedimentary rocks consisting of sandstone, shale, and conglomerate are located in the southwestern portion of the Planning Area in the hilly terrain. There is a band of Eocene Marine sedimentary rocks consisting of shale, sandstone, conglomerate, and minor limestone located in a band that separates the Quaternary Marine/Alluvium and the Upper Cretaceous.

FAULTS

Faults are classified as Historic, Holocene, Late Quaternary, Quaternary, and Pre-Quaternary according to the age of most recent movement (California Geological Survey, 2002). These classifications are described as follows:

- **Historic:** faults on which surface displacement has occurred within the past 200 years;
- **Holocene:** shows evidence of fault displacement within the past 11,000 years, but without historic record;
- **Late Quaternary:** shows evidence of fault displacement within the past 700,000 years, but may be younger due to a lack of overlying deposits that enable more accurate age estimates;
- **Quaternary:** shows evidence of displacement sometime during the past 1.6 million years; and

- **Pre-Quaternary:** without recognized displacement during the past 1.6 million years.

Faults are further distinguished as active, potentially active, or inactive. (California Geological Survey, 2002).

- **Active:** An active fault is a Historic or Holocene fault that has had surface displacement within the last 11,000 years;
- **Potentially Active:** A potentially active fault is a pre-Holocene Quaternary fault that has evidence of surface displacement between about 1.6 million and 11,000 years ago; and
- **Inactive:** An inactive fault is a pre-Quaternary fault that does not have evidence of surface displacement within the past 1.6 million years. The probability of fault rupture is considered low; however, this classification does not mean that inactive faults cannot, or will not, rupture.

There are no known active or potentially active faults located within the Planning Area. However, there are numerous active faults located in the regional vicinity of Brentwood. Figure 3.6-1 illustrates the location of some of the closest faults. Below is a brief summary of the most notable faults in the regional vicinity:

- **Antioch Fault**: The Antioch fault, which is located in the southwestern portion of the Planning Area, was previously considered active and was zoned under the Alquist-Priolo Act as potentially capable of surface rupture. However, studies over the past few decades have indicated that the Antioch fault is not active and does not pose a surface-faulting hazard. The fault is no longer zoned by the State of California as an earthquake fault zone under the Alquist-Priolo Act.
- **Calaveras Fault:** The 75-mile-long Calaveras fault represents a significant seismic source in the southern and eastern San Francisco Bay region. It extends from an intersection with the Paicines fault south of Hollister, through the Diablo Range east of San Jose, and along the Pleasanton-Dublin-San Ramon urban corridor. The fault consists of three major sections: the southern Calaveras fault (from the Paicines fault to San Felipe Lake), the central Calaveras fault (from San Felipe Lake to Calaveras Reservoir), and the northern Calaveras fault (from Calaveras Reservoir to Danville). The level of contemporary seismicity along the southern section is low to moderate, whereas the central section has generated numerous moderate earthquakes in historic time. The northern section has a relatively low level of seismicity and may be locked. Paleoseismologic studies suggest a recurrence interval for large ruptures of between 250 and 850 years on the northern fault section. The timing of the most recent rupture on the northern Calaveras fault is unknown, but is estimated to have occurred several hundred years ago. Seismologic evidence suggests that the southern and central sections may produce earthquakes as large as MWMw 6.2. Geologic and seismologic data suggest that the northern section may produce earthquakes as large as MWMw 7.0. This fault is located approximately 17 miles southwest of Brentwood.
- **Coast Range-Sierran Block Boundary Zone**: The Coast Range-Sierran Block (CRSB) boundary zone consists of a complex zone of thrust faulting marking the boundary between the Coast Ranges block and the Sierran basement rocks concealed beneath the Great Valley sedimentary sequence of the Sacramento and San Joaquin valleys. The basal detachment within the CRSB is a low-angle, west-dipping thrust accommodating eastward

thrusting of the Coast Range block over the Sierran block. Above this detachment is a complex array of west-dipping thrusts and east-dipping back-thrusts. The CRSB extends from near Red Bluff in the northern Sacramento Valley to Wheeler Ridge in the southern San Joaquin Valley. The CRSB was the probable source of the two MWMw 6.25 to 6.75 earthquakes recorded in 1892 near Winters, and the 1983 MWMw 6.5 Coalinga earthquake. The faults do not have surface expression. The CRSB is estimated to be capable of generating maximum earthquakes of MWMw 6.5 to 6.75, with an average recurrence interval of 360 to 440 years. Brentwood is within the CRSB boundary zone.

- **Concord-Green Valley Fault:** The Concord-Green Valley fault is a northwest-striking, right-lateral strike-slip fault zone that extends from the Walnut Creek area across Suisun Bay and continues to the north. The Concord fault extends approximately 12 miles, from the northern slopes of Mt. Diablo to Suisun Bay. North of Suisun Bay, the Green Valley fault continues to the north about 28 miles. The Concord fault is an actively creeping structure that has a long-term creep rate of approximately 5 mm/yr. It is estimated that rupture of both faults would produce a maximum earthquake of about MWMw 6.9 with a recurrence interval of approximately 180 years. This fault is located approximately 15 miles west of Brentwood.
- **Greenville-Marsh Creek Fault:** The Greenville-Marsh Creek fault is a northwest-striking strike-slip fault of the San Andreas system in the northern Diablo Range, extending from Bear Valley to the east side of Mount Diablo. This fault has a lower slip rate than other structures within the San Andreas system with a long-term rate of approximately 1 to 3 mm/yr. This fault produced a moderate magnitude earthquake in 1980. Research is currently being conducted on the fault zone to better constrain its slip rate and its history of past earthquakes. A maximum earthquake of MWMw 6.9 has been estimated to the Greenville fault; the recurrence interval is estimated to be about 550 years. This fault is located approximately 8 miles south/southwest of Brentwood.
- **Hayward Fault:** The Hayward fault is approximately 62 miles long and has been divided into two fault segments: a longer southern segment and a shorter northern segment. This structure is considered to be the most likely source of the next major earthquake in the San Francisco Bay Area. A maximum earthquake of MWMw 6.9 has been estimated for both the northern and southern segments of the Hayward fault. This fault is located approximately 30 miles west of Brentwood.
- **Mount Diablo Thrust Fault:** The Mount Diablo thrust fault is a northeast-dipping structure located beneath the Mount Diablo anticline. This blind thrust fault is estimated to be capable of generating a maximum earthquake of MWMw 6.25. This fault is located approximately 12 miles west of Brentwood.
- **Pittsburg-Kirby Hills Fault:** The Pittsburg-Kirby Hills fault extends a distance of approximately 26 miles from the Kirby Hills north of the Sacramento River, to the eastern flank of Mount Diablo. The fault is a right-lateral strike-slip with an estimated maximum earthquake of MWMw 6.75. This fault is located approximately 10 miles northwest of Brentwood.
- **Rodgers Creek Fault:** The Rodgers Creek fault is a 38-mile-long, northwest-striking, right-lateral strike-slip fault that extends northward from the projection of the Hayward fault on the south side of San Pablo Bay. Paleoseismic investigations identified evidence for three earthquakes in the last 925 to 1,000 years, yielding a predicted earthquake recurrence

interval of 230 years for an earthquake of MWMw 7.0. This fault is located approximately 40 miles northwest of Brentwood.

- **San Andreas Fault:** The San Andreas fault is the largest active fault in California, and extends from the Gulf of California to Cape Mendocino. It was the source of the 1906 MWMw 7.9 San Francisco earthquake. In the Bay Area, various segments of the fault include the southern Santa Cruz Mountains, possible source of the 1989 MWMw 7.0 Loma Prieta earthquake; the Peninsula segment; and the North Coast segment. These segments have been estimated to have a maximum earthquake of MWMw 7, MWMw 7.1, and MWMw 7.9, respectively. This fault is located approximately 45 miles west of Brentwood.
- **West Napa Fault:** The West Napa fault consists of a north-northwest-striking zone of short right-lateral strike-slip fault segments in the hills to the west of the city of Napa. The fault extends about 19 miles from Napa to Yountville. It is characterized by well-defined active fault features such as tonal lineations, scarps in late Pleistocene and Holocene alluvium, closed depressions, and right-laterally deflected drainages. The estimated maximum earthquake for the West Napa fault based on fault length and continuity is MWMw 6.5. This fault is located approximately 30 miles northwest of Brentwood.

SEISMIC HAZARDS

Seismic hazards include both rupture (surface and subsurface) along active faults and ground shaking, which can occur over wider areas. Ground shaking, produced by various tectonic phenomena, is the principal source of seismic hazards in areas devoid of active faults. All areas of the state are subject to some level of seismic ground shaking.

Several scales may be used to measure the strength or magnitude of an earthquake. Magnitude scales (ML) measure the energy released by earthquakes. The Richter scale, which represents magnitude at the earthquake epicenter, is an example of an ML. As the Richter scale is logarithmic, each whole number represents a 10-fold increase in magnitude over the preceding number. The following table represents effects that would be commonly associated with Richter Magnitudes:

TABLE 3.6-1: RICHTER MAGNITUDES AND EFFECTS

MAGNITUDE	*EFFECTS*
< 3.5	Typically not felt
3.5 – 5.4	Often felt but damage is rare
5.5 – < 6	Damage is slight for well-built buildings
6.1 – 6.9	Destructive potential over ±60 miles of occupied area
7.0 – 7.9	"Major Earthquake" with the ability to cause damage over larger areas
≥ 8	"Great Earthquake" can cause damage over several hundred miles

SOURCE: ASSOCIATION OF BAY AREA GOVERNMENTS, 2011.

Moment Magnitude (Mw) is used by the United States Geological Service (USGS) to describe the magnitude of large earthquakes in the U.S. The value of moment is proportional to fault slip multiplied by the fault surface area. Thus, moment is a measurement that is related to the amount of energy released at the point of movement. The Mw scale is often preferred over other scales, such as the Richter, because it is valid over the entire range of magnitudes. Moment is normally converted to Mw, a scale that approximates the values of the Richter scale.

Seismic ground shaking hazards are calculated as a probability of exceeding certain ground motion over a period of time, usually expressed in terms of "acceleration." The acceleration of the Earth during an earthquake can be described in terms of its percentage of gravity (g). For example, the 10% probability of exceedance in 50 years is an annual probability of 1 in 475 of being exceeded each year. This level of ground shaking has been used for designing buildings in high seismic areas. This probability level allows engineers to design buildings for larger ground motions than what is expected to occur during a 50-year interval, which will make buildings safer than if they were only designed for the ground motions that are expected to occur in the next 50 years.

The California Geological Survey estimates a 10% probability of exceeding 30-50 percent of gravity at peak ground acceleration over the next 50 years in the Brentwood Planning Area, as well as other communities within eastern Contra Costa County. Moving west toward the Hayward fault, the estimates increase up to 70 percent or more of gravity at peak ground acceleration.

In contrast, other scales describe earthquake intensity, which can vary depending on local characteristics. The Modified Mercalli Scale (MM) expresses earthquake intensity at the surface on a scale of I through XII. While there are no known active faults located within the city of Brentwood, the area could experience considerable ground shaking generated by faults outside Brentwood. For example, Brentwood could experience intensities of MM VII to VIII generated by seismic events occurring along the Greenville-Marsh Creek fault or Mt. Diablo thrust fault (ABAG, 2013). The following table represents the potential effects of an earthquake based on the Modified Mercalli Intensities.

TABLE 3.6-2: MODIFIED MERCALLI INTENSITIES AND EFFECTS

MM	*EFFECTS*
I	Movement is imperceptible
II	Movement may be perceived (by those at rest or in tall buildings)
III	Many feel movement indoors; may not be perceptible outdoors
IV	Most feel movement indoors; Windows, doors, and dishes will rattle
V	Nearly everyone will feel movement; sleeping people may be awakened
VI	Difficulty walking; Many items fall from shelves, pictures fall from walls
VII	Difficulty standing; Vehicle shaking felt by drivers; Some furniture breaks
VIII	Difficulty steering vehicles; Houses may shift on foundations
IX	Well-built buildings suffer considerable damage; ground may crack
X	Most buildings and foundations and some bridges destroyed
XI	Most buildings collapse; Some bridges destroyed; Large cracks in ground
XII	Large scale destruction; Objects can be thrown into the air

SOURCE: ASSOCIATION OF BAY AREA GOVERNMENTS, 2011.

The Significant United States Earthquakes 1568 – 2009 data published by the USGS in the National Atlas identifies earthquakes that caused deaths, property damage, geologic effects, or were felt by populations near the epicenter. No significant earthquakes are identified within Brentwood; however, significant earthquakes are documented in the region. The following table presents the significant earthquakes in the region.

The city of Brentwood could also be subject to major earthquakes along currently inactive or unrecognized faults. Two examples in California include the 1983 Coalinga Quake (6.5 magnitude) and the 1994 Northridge Quake (6.7 magnitude), which was an unknown fault, and a "blind" thrust fault over 10 miles below the surface, respectively.

TABLE 3.6-3: SIGNIFICANT EARTHQUAKES IN THE REGION

MAGNITUDE	*INTENSITY*	*LOCATION*	*YEAR*
5.0	VII	Napa	2000
6.9	IX	Loma Prieta (San Andreas)	1989
5.4	N/A	Santa Cruz County	1989
6.2	N/A	Morgan Hill	1984
5.8, 5.8	VII	Livermore	1980
5.7	N/A	Coyote Lake	1979
5.7, 5.6	N/A	Santa Rosa	1969
5.3, 4.2	N/A	Daly City	1957
5.4	N/A	Concord	1954
6.5	N/A	Calaveras fault	1911
7.9	IX	San Francisco	1906
6.8	N/A	Mendocino	1898
6.2	N/A	Mare Island	1898
6.3	N/A	Calaveras fault	1893
6.2	VIII	Winters	1892
6.4	N/A	Vacaville	1892
6.8	VII	Hayward	1868
6.5	VIII	Santa Cruz Mountains	1865
6.8	N/A	San Francisco Peninsula	1838

SOURCE: UNITED STATE GEOLOGICAL SURVEY, 2013.

SEISMIC HAZARD ZONES

Alquist-Priolo Fault Zones

An active earthquake fault, per California's Alquist-Priolo Act, is one that has ruptured within the Holocene Epoch (≈11,000 years). Based on this criterion, the California Geological Survey identifies Earthquake Fault Zones. These Earthquake Fault Zones are identified in Special Publication 42 (SP42), which is updated as new fault data become available. The SP42 lists all counties and cities within California that are affected by designated Earthquake Fault Zones. The Fault Zones are delineated on maps within SP42 (Earthquake Fault Zone Maps).

There are no Alquist-Priolo Earthquake Fault Zones located within the city of Brentwood; however, approximately eight miles to the south/southwest lies the Greenville-Marsh Creek fault, 15 miles to the west lies the Concord-Green Valley Fault, and 17 miles to the southwest lies the Calaveras fault, all of which are delineated as Alquist-Priolo Fault Zones. There are four other major faults delineated as Alquist-Priolo Fault Zones between 30 and 50 miles from Brentwood (Hayward fault, West Napa fault, Rodgers Creek fault, and the San Andreas fault). Figure 3.6-1 illustrates the location of the closest Alquist-Priolo Earthquake Fault Zones.

Seismic Hazard Zones

The State Seismic Hazards Mapping Act (1990) addresses hazards along active faults. The Northern California counties affected by the Seismic Hazard Zonation Program include Alameda, San Francisco, San Mateo and Santa Clara. The Southern California counties affected by the Program include San Bernardino, Los Angeles, Orange, and Ventura. There are no seismic hazard zones currently mapped in Contra Costa County.

LIQUEFACTION

Liquefaction, which is primarily associated with loose, saturated materials, is most common in areas of sand and silt or on reclaimed lands. Cohesion between the loose materials that comprise the soil may be jeopardized during seismic events and the ground will take on liquid properties. Thus, liquefaction requires specific soil characteristics and seismic shaking.

In collaboration with the USGS Earthquake Hazard Program, the California Geological Survey (CGS) produces Liquefaction Susceptibility Maps and identifies "Zones of Required Investigation" per the State's Seismic Hazard Zonation Program.

The article *Mapping Liquefaction-Induced Ground Failure Potential* (Youd and Perkins, 1978) provides a generalized matrix to demonstrate the relationship between liquefaction potential and depositional landscapes. The following table, which is recreated from Youd and Perkins, demonstrates the general relationship between the nature and age of sediment and the anticipated liquefaction potential.

TABLE 3.6-4: LIQUEFACTION POTENTIAL BASED ON SEDIMENT TYPE AND AGE OF DEPOSIT

SEDIMENT	*SUSCEPTIBILITY BASED ON AGE OF DEPOSITS (YEARS BEFORE PRESENT)*			
	MODERN (< 500 YEARS)	*HOLOCENE (< 10,000)*	*PLEISTOCENE (< 2MILLION)*	*PRE-PLEISTOCENE (> 2 MILLION)*
River Channel	Very High	High	Low	Very Low
Flood Plain	High	Moderate	Low	Very Low
Alluvial Fan/Plain	Moderate	Low	Low	Very Low
Lacustrine/Playa	High	Moderate	Low	Very Low
Colluvium	High	Moderate	Low	Very Low
Talus	Low	Low	Very Low	Very Low
Loess	High	High	High	- ? -
Glacial Till	Low	Low	Very Low	Very Low
Tuff	Low	Low	Very Low	Very Low
Tephra	High	High	- ? -	- ? -
Residual Soils	Low	Low	Very Low	Very Low
Sebka	High	Moderate	Low	Very Low
Un-compacted Fill	Very High	NA	NA	NA
Compacted fill	Low	NA	NA	NA

SOURCE: YOUD AND PERKINS, 1978

The CGS Liquefaction Susceptibility Maps and "Zones of Required Investigation" are produced per the State's Seismic Hazard Zonation Program. In Northern California, the areas of high liquefaction potential identified by the CGS are confined to the nine counties comprising the Bay Area, which includes Contra Costa County. Figure 3.6-2 illustrates the liquefaction potential in the vicinity of the Planning Area.

Liquefaction potential in the Planning Area varies from very low to high. The area designated "very low" potential for liquefaction is located in hilly area in the west and southwest portion of Planning Area. Moving to the north and east the potential for liquefaction increases to "moderate." The northeastern/eastern portion of the Planning Area has a "high" potential for liquefaction.

OTHER GEOLOGIC HAZARDS

Soils

The soils in the Planning Area are predominately sediments and recent alluvium. According to the Natural Resource Conservation Service (2011), there are thirteen different soil series located in the Planning Area. These include the Altamont, Brentwood, Briones, Capay, Delhi, Fontana, Kimball, Linne, Pescadero, Piper, Rincon, Sorrento, and Sycamore series. Figure 3.6-3 presents a map of the soils located in the Planning Area. Information from the NRCS official soil description for these series is provided below.

- The Altamont series of soils consist of deep, well-drained soils that formed in material weathered from fine-grained sandstone and shale. Runoff varies from slow to rapid, and permeability is slow. These soils are located mostly in the south and southwestern portion of the Planning Area on slopes ranging from 9 to 50%.

- The Brentwood series consists of well-drained soils on valley fill with slopes between zero and 2%. These soils are formed in alluvium from sedimentary rock. Runoff and permeability is slow. These soils are located mostly in the eastern and central portion of the Planning Area on relatively flat terrain.

- The Briones series consists of somewhat excessively drained, moderately deep soils over sandstone. Briones soils are found on uplands and on strongly sloping to steep terrain. These soils have medium to rapid runoff and rapid permeability of the soil, but slow or very slow permeability in the sandstone. These soils are located mostly in the south and southwestern portion of the Planning Area on slopes ranging from 5 to 50%.

- The Capay series consists of moderately well drained soils on lower edges of valley fill and on old benches that have been slowly dissected. These soils formed in alluvium from sedimentary rock and have slow runoff and slow permeability. These soils are located throughout the Planning Area on 0 to 9% slopes.

- The Delhi series consists of somewhat excessively drained soils. These soils formed in wind-modified stream deposits of mixed origin. These soils are located in the northeastern portion of the Planning Area on 2 to 9% slopes.

- The Fontana series consists of well-drained soils underlain by fine-grained sandstone. These soils occur on uplands and have moderately slow permeability. Where the soils are exposed, runoff is slow to medium. These soils are isolated in the southwestern portion of the Planning Area on 15 to 30% slopes.

- The Kimball series of soils consists of very deep, well-drained soils formed in alluvium from mixed sources. They formed in alluvium from a variety of sources including sedimentary, metasedimentary, metabasic, and granitic rock. They are well drained, with slow to medium runoff, and have very slow permeability. These soils are on fan terraces in the southern portion of the Planning Area and have slopes of 2 to 30%.

- The Linne series consists of well-drained soils underlain by calcareous interbedded shale and soft sandstone. Runoff for the series is medium and the permeability is moderately slow. These soils are located in the western/central portion of the Planning Area with slopes between 5 and 15%.

- The Pescadero series consists of very deep, poorly drained soils that formed in alluvium from sedimentary rocks. They are poorly drained or ponded in concave slopes, with very slow runoff and very slow permeability. These soils are located in the south and southwestern portion of the Planning Area on relatively flat areas.

- The Piper series consists of poorly drained soils formed on low eolian mounds and ridges that have become more prominent as the surrounding organic soils subsided. These soils are located in the northeastern portion of the Planning Area on relatively flat terrain.

- The Rincon series consists of well-drained soils mainly on benches, formed in alluvial valley fill from sedimentary rock. Runoff varies from slow to medium and permeability is slow. These soils occur throughout the Planning Area on slopes between 0 to 2%.

- The Sorrento series of soils consists of very deep, well-drained soils that formed in alluvium mostly from sedimentary rocks. Sorrento soils are found on alluvial fans and stabilized floodplains and have slopes of 0 to 15%. They are well drained, have negligible to medium runoff, and moderate to moderately slow permeability depending upon dominant texture and amount of stratification in the lower part of the profile. These soils occur in a band that stretches from the southern to northeastern portion of the Planning Area associated with Marsh Creek on relatively flat terrain.

- The Sycamore series consists of poorly drained soils that formed in alluvium from sedimentary rock. These soils are on flood plains. These soils occur in a band that stretches from the western to central portion of the Planning Area associated with Sand Creek and Marsh Creek on relatively flat terrain.

Erosion

The U.S. Natural Resource Conservation Service (NRCS) delineates soil units and compiles soils data as part of the National Cooperative Soil Survey. The following description of erosion factors is provided by the NRCS Physical Properties Descriptions:

- Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Erosion factor Kw indicates the erodibility of the whole soil, whereas Kf indicates the erodibility of the fine soils. The estimates are modified by the presence of rock fragments.

Soil erosion data for the city of Brentwood were obtained from the NRCS. As identified in the table below, the erosion factor Kf varies from 0.15 to 0.37, which is considered moderately low to moderate potential for erosion.

TABLE 3.6-5: SOIL EROSION FACTORS

MAP SYMBOL AND SOIL NAME	KF	REPRESENTATIVE VALUE		
		% SAND	% SILT	% CLAY
AbD: Altamont Clay, 9-15% slopes	0.20	22.1	27.9	50
AbE: Altamont Clay, 15 -30% slopes	0.20	22.1	27.9	50
AcF: Altamont-Fontana Complex, 30 -50% slopes	0.20	22.1	27.9	50
Bb: Brentwood Clay Loam	0.28	34.2	32.3	33.5
BdE: Briones Loamy Sand, 5 -30% slopes	0.20	80.5	17.0	2.5
BdF: Briones Loamy Sand, 30 -50% slopes	0.20	80.5	17.0	2.5
CaA: Capay Clay, 0-2% slopes	0.20	28.1	29.4	42.5
CaC: Capay Clay, 2-9% slopes	0.20	22.1	27.9	50
DaC: Delhi Sand, 2- 9% slopes	0.15	96.0	1.5	2.5
Fd: Fontana-Altamont Complex	0.37	18.1	50.9	31
KaC: Kimball Gravelly Clay Loam, 2- 9% slopes	0.32	35.4	33.6	31
KaE: Kimball Gravelly Clay Loam, 9-30% slopes	0.32	35.4	33.6	31
LbD: Linne Clay Loam, 5-15% slopes	0.20	35.4	33.6	31
Pb: Pescadero Clay Loam	0.28	35.4	33.6	31
Pc: Pescadero Clay Loam, Strongly Alkali	0.32	35.4	33.6	31
Pd: Piper Sand	0.20	96	1.5	2.5
RbA: Rincon Clay Loam, 0-2% slopes	0.28	35.4	33.6	31
Sm: Sorrento Silty Clay Loam	0.24	18.1	50.9	31
Sn: Sorrento Silty Clay Loam, Sand Substratum	0.24	18.1	50.9	31
Sp: Sycamore Silty Clay Loam, Clay Substratum	0.37	6.7	62.3	31

SOURCE: NATURAL RESOURCE CONSERVATION SERVICE, 2013.

Expansive Soils

The NRCS delineates soil units and compiles soils data as part of the National Cooperative Soil Survey. The following description of linear extensibility (also known as shrink-swell potential or expansive potential) is provided by the NRCS Physical Properties Descriptions:

> *"Linear extensibility" refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.*
>
> *The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to*

buildings, roads, and other structures and to plant roots. Special design commonly is needed.

The linear extensibility of the soils within Brentwood ranges from Low to High. Figure 3.6-4 illustrates the shrink-swell potential of soils in the Planning Area. The majority of the Planning Area has moderate or high expansive soils, including most of the undeveloped land. A small part of the southwestern and northeastern portion of the Planning Area has low expansive soils. The areas with moderate to high expansive soils would require special design considerations due to shrink-swell potentials.

Landslide

The California Geological Survey classifies landslides with a two-part designation based on Varnes (1978) and Cruden and Varnes (1996). The designation captures both the type of material that failed and the type of movement that the failed material exhibited. Material types are broadly categorized as either rock or soil, or a combination of the two for complex movements. Landslide movements are categorized as falls, topples, spreads, slides, or flows.

Landslide potential is influenced by physical factors, such as slope, soil, vegetation, and precipitation. Landslides require a slope, and can occur naturally from seismic activity, excessive saturation, and wildfires, or from human-made conditions such as construction disturbance, vegetation removal, wildfires, etc.

Within Contra Costa County, the hillsides have some susceptibility for landslides, while the valleys have a low susceptibility. Figure 3.6-5 illustrates the landslide potential in the vicinity of the Planning Area. Given the relatively level slopes throughout Brentwood, the landslide potential is very low. This is not a significant constraint in the Planning Area. The landslide potential increases in the foothills and mountains to the west and south of the Planning Area.

Lateral Spreading

Lateral spreading generally is a phenomenon where blocks of intact, non-liquefied soil moves down slope on a liquefied substrate of large areal extent. The potential for lateral spreading is present where open banks and unsupported cut slopes provide a free face (unsupported vertical slope face). Ground shaking, especially when inducing liquefaction, may cause lateral spreading toward unsupported slopes. The greatest potential for lateral spreading in the Planning Area is in the hilly terrain to the south and west.

Subsidence

Subsidence is the settlement of soils of very low density generally from either oxidation of organic material, or desiccation and shrinkage, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. In Contra Costa County, subsidence occurs in the Delta plain and is caused by the natural process of oxidation of island peat soils, resulting in a gradual sinking of the ground. As many of the islands in the Delta (along with their levees) sink in elevation, the levees that protect the island's agricultural and/or residential uses must be raised and reinforced by adding more earth fill to the top of the levees.

Recent evidence indicates that many Delta islands in the region have experienced significant subsidence over the last several decades. For example, it is estimated that Webb Tract in Contra Costa County has subsided up to 17 feet. Most reclaimed portions of the Delta in the County have subsided at least 10 feet. Subsidence in the Planning Area has not been considered a significant issue, although Delta lands to the north and east will continue to be a significant concern.

Corrosivity

Corrosivity refers to potential soil-induced electrochemical or chemical action that could corrode or deteriorate concrete, reinforcing steel in concrete structures, and bare-metal structures exposed to these soils. The rate of corrosion is related to factors such as soil moisture, particle-size distribution, and the chemical composition and electrical conductivity of the soil. The natural soils found in the Planning Area may be moderately corrosive. The materials used in the construction of modern infrastructure are typically designed to resist the effects of corrosion over the design life of the infrastructure. In addition, native soils are typically replaced by engineered backfill which generally has a low corrosive potential.

Naturally Occurring Asbestos

The term "asbestos" is used to describe a variety of fibrous minerals that, when airborne, can result in serious human health effects. Naturally occurring asbestos is commonly associated with ultramafic rocks and serpentinite. Ultramafic rocks, such as dunite, peridotite, and pyroxenite are igneous rocks comprised largely of iron-magnesium minerals. As they are intrusive in nature, these rocks often undergo metamorphosis, prior to their being exposed on the Earth's surface. The metamorphic rock serpentinite is a common product of the alteration process. Naturally occurring asbestos is mapped in Contra Costa County, although it is all located to the west of the Planning Area in mountainous areas. There is no naturally occurring asbestos mapped within Brentwood.

Tsunami/Seiches

Tsunamis and seiches are standing waves that occur in the ocean or relatively large, enclosed bodies of water (i.e., Lake Tahoe) that can follow seismic, landslide, and other events from local sources (California, Oregon, Washington coast) or distant sources (Pacific Rim, South American Coast, Alaska/Canadian coast). The city of Brentwood is not within a tsunami or seiche hazard area.

STRUCTURAL DAMAGE

Fault Rupture Damage. There are no known active faults that have been mapped within the Planning Area, and the potential for structures to be adversely affected by fault rupture is considered to be relatively low based on the absence of known faults. The California Geological Survey has not established any Alquist-Priolo Earthquake Fault Zones in the Planning Area. It is possible that future investigation could identify active faults in the Planning Area. Fault rupture hazards in the Planning Area should be reevaluated if data suggests that such a hazard is present.

Ground Shaking Damage. As is the case for most areas within California, the potential for seismic ground shaking in the Planning Area is expected. As a result, the State requires special design

considerations for all structural improvements in accordance with the seismic design provisions in the California Building Code. California's seismic design provisions require enhanced structural integrity based on several risk parameters with the ultimate objective of protecting the life and safety of building occupants and the public. For large earthquakes, the seismic design standards primarily ensure that the building will not collapse, but some structural and non-structural damage may be expected. Older buildings constructed of unreinforced masonry, including materials such as brick, concrete, and stone, pre-1940 wood frame houses, and pre-1973 tilt-up concrete buildings are particularly susceptible to structural damage from ground shaking. In most cases, these older buildings require retrofit, or they risk significant structural damage during an earthquake.

Liquefaction Damage. The liquefaction potential in the Planning Area varies from "very low" to "high," with the majority of the Planning Area designated "moderate" or "high." Liquefaction poses a substantial source of hazard to structures and infrastructure located throughout the Planning Area. There are a variety of geotechnical strategies that can be implemented to mitigate the potential for structural damage. These include appropriate foundation design, engineering soils, groundwater management, and the use of special flexible materials for construction.

Landslide and Lateral Spreading Damage. Given the relatively level slopes throughout the majority of the Planning Area, the landslide and lateral spreading potential is very low. The landslide and lateral spreading potential increases some in the hilly terrain to the west and south of the Planning Area. There are a variety of geotechnical strategies that can be implemented to mitigate the potential for landslide and lateral spreading in this area. These include engineering soils, groundwater management, surface water control, slope reconfiguration, and structural reinforcement if necessary.

MINERAL AND ENERGY RESOURCES

Mineral Resource Classification

Pursuant to the Surface Mining and Reclamation Act of 1975 (SMARA), the California State Mining and Geology Board oversees the Mineral Resource Zone (MRZ) classification system. The MRZ system characterizes both the location and known/presumed economic value of underlying mineral resources. The mineral resource classification system uses four main MRZs based on the degree of available geologic information, the likelihood of significant mineral resource occurrence, and the known or inferred quantity of significant mineral resources. The four classifications are described in Table 3.6-6 below.

TABLE 3.6-6: MINERAL RESOURCE CLASSIFICATION SYSTEM	
CLASSIFICATION	DESCRIPTIONS
MRZ-1	Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
MRZ-2	Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
MRZ-3	Areas containing mineral deposits, the significance of which cannot be evaluated.
MRZ-4	Areas where available information is inadequate for assignment to any other MRZ classification.

SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION DIVISION OF MINES AND GEOLOGY, 2000.

Mineral Resources

Rocks exposed within the Planning Area are predominantly sediments of the late Cretaceous and Eocene Age (36 to 75 million years ago). The low-lying hills in the western portion of the Planning Area mark the easternmost portion of the Coast Range geomorphic province. Sediments throughout most of the Planning Area consist of young (Quatenary Age) alluvial deposits. The recent alluvial deposits consist of the clay, silt, sand, and gravel exposed throughout the low, flat lying portions of the Planning Area. Within the Planning Area, mineral resources include sand, gravel, coal, oil, and gas.

Historically, large amounts of sand were mined from the dune sands of the northern portion of the Planning Area, but competition from sand and gravel pits in the Tracy and Livermore areas caused a gradual decline in the production of Brentwood sands. The sand is yellow-brown in color, fine grained, angular, and generally unconsolidated.

Specialty sand has also been mined from Domengine sandstone deposits that traverse the Planning Area between Deer Valley Road to the northwest and the southeast corner of the Planning Area. The Domengine sandstone typically consists of light brown, fine to medium grained, angular, and compact sand, which has a high silica content.

Most of the rock outcrops within the Planning Area are soft, low density, and fine grained. Therefore, they do not yield substantial rip-rap or crushed rock aggregate products. Gravel production in the Planning Area has historically been insignificant. It is possible that some of the massive sandstones exposed along the western portion of the Planning Area may have some limited value for use as rip-rap.

Coal is found within the southern and western portions of the Planning Area, and coal mines were active from 1861 to 1902. The seams of sub-bituminous coal have been mined in the southwestern portion of the Planning Area, near the intersection of Briones Valley Road and Concord Avenue. According to reports by the State Mineralogist, the coal consistent of thin seams, one to seven feet thick, diving deep into the earth. Mining extended to great depths along the beds, and consequently the costs became prohibitive. Rising excavation costs combined with

competition from higher grade coal and the use of petroleum limited coal production in the Planning Area.

Oil and gas has been sporadically produced in the region since 1864. The Brentwood oil and gas field is California's northernmost commercial oil-producing area. The field was discovered in June 1962 by Shell, Occidental, and Brazos' joint well, Heidorn 4-4. The area was developed as a gas field until the discovery of oil in the Ginochio 2-16 well in December 1962. By December 1965, there were 50 producing wells in the Brentwood field. Of these, 15 produced predominantly gas with small quantities of associated oil. The other 35 wells produced oil and gas at different ratios.

The Paleocene and Cretaceous reservoir beds dip north at a low angle and are truncated by a south-dipping unconformity surface, which is overlain by a widespread "Meganos gorge" shale unit that provides the major updip trap of the oil and gas pools. The field is traversed by a series of northwest-striking normal faults. The oil-producing portion of the Brentwood field consists of three producing zones in massive sandstone beds separated by shale bodies. These are the First Massive Martinez sand of Paleocene age, the Second Massive Martinez sand of Paleocene age, and the Third Massive Martinez sand of Late Cretaceous C- and D-1-Zone ages. The oil is in 25-100-ft columns overlain by gas caps ranging upward to 250 ft in thickness. Thinly bedded Upper Martinez sandstone stringers, known as the "Heidorn" and "Ginochio" sands, are about 500-800 ft above the First Massive Martinez and produce essentially dry gas with only minor quantities of condensate. At peak production in 1981, the Brentwood oil and gas field produced 15.1 cubic feet of gas and 24,978 barrels of condensate.

The active and plugged wells in the Brentwood Planning Area are presented in Figure 3.6-6. Oil and gas is recovered from sands mostly of the Eocene age, at depths of approximately 4,000 feet. The potential for additional oil and gas reserves exists within the Planning Area.

In general, sand is likely the most significant economic mineral deposit found within the Planning Area. It is possible that significant deposits of coal and specialty sand remain in the western portion of the Planning Area, within the Domengine sandstone. Dry gas is presently being produced in the northeast portion of the city, and the potential for additional reserves exists throughout the area.

Location of Mineral Resources

The California Office of Mine Reclamation periodically publishes a list of qualified permitted aggregate mines regulated under SMARA that is generally referred to as the AB 3098 List. The Public Contract Code precludes mining operations that are not on the AB 3098 List from selling sand, gravel, aggregates or other mined materials to State or local agencies. As of January 1, 2013, there are 3 aggregate mines on the AB 3098 list in Contra Costa County. Table 3.6-7 identifies the active aggregate mines located in the county. None of the three listed mines are within the Planning Area.

TABLE 3.6-7: AB 3098 LIST – ACTIVE MINES IN CONTRA COSTA COUNTY		
MINE ID	MINE NAME	MINE OPERATOR
91-07-0001	Byron Plant	G3 Enterprises
91-07-0003	Clayton Quarry	Hanson Aggregates
91-07-0004	Clayton	CEMEX Construction Materials Pacific, LLC

SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION DIVISION OF MINES AND GEOLOGY, 2013.

3.6.2 REGULATORY SETTING

FEDERAL REGULATIONS

Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act of 1977 (42 USC, 7701 et seq.) requires the establishment and maintenance of an earthquake hazards reduction program by the Federal government.

Executive Order 12699

Signed in January 1990, this executive order of the President implements provisions of the Earthquake Hazards Reduction Act for "federal, federally assisted or federally regulated new building construction" and requires the development and implementation of seismic safety programs by Federal agencies.

International Building Code (IBC)

The purpose of the International Building Code (IBC) is to provide minimum standards to preserve the public peace, health, and safety by regulating the design, construction, quality of materials, certain equipment, location, grading, use, occupancy, and maintenance of all buildings and structures. IBC standards address foundation design, shear wall strength, and other structurally related conditions.

Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act, as amended, is the basic statute regulating hazardous materials transportation in the United States. The purpose of the law is to provide adequate protection against the risks to life and property inherent in transporting hazardous materials in interstate commerce. This law gives the U.S. Department of Transportation (USDOT) and other agencies the authority to issue and enforce rules and regulations governing the safe transportation of hazardous materials (DOE 2002).

Resource Conservation and Recovery Act

The 1976 Federal Resource Conservation and Recovery Act (RCRA) and the 1984 RCRA Amendments regulate the treatment, storage, and disposal of hazardous and non-hazardous wastes. The legislation mandated that hazardous wastes be tracked from the point of generation

to their ultimate fate in the environment. This includes detailed tracking of hazardous materials during transport and permitting of hazardous material handling facilities.

The 1984 RCRA amendments provided the framework for a regulatory program designed to prevent releases from Underground Storage Tanks (UST). The program establishes tank and leak detection standards, including spill and overflow protection devices for new tanks. The tanks must also meet performance standards to ensure that the stored material will not corrode the tanks. Owners and operators of USTs had until December 1998 to meet the new tank standards. As of 2001, an estimated 85 percent of USTs were in compliance with the required standards.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (the Act) introduced active Federal involvement to emergency response, site remediation, and spill prevention, most notably the Superfund program. The Act was intended to be comprehensive in encompassing both the prevention of, and response to, uncontrolled hazardous substances releases. The Act deals with environmental response, providing mechanisms for reacting to emergencies and to chronic hazardous material releases. In addition to establishing procedures to prevent and remedy problems, it establishes a system for compensating appropriate individuals and assigning appropriate liability. It is designed to plan for and respond to failure in other regulatory programs and to remedy problems resulting from action taken before the era of comprehensive regulatory protection.

Natural Gas Pipeline Safety Act

The Natural Gas Pipeline Safety Act authorizes the U.S. Department of Transportation Office of Pipeline Safety to regulate pipeline transportation of natural (flammable, toxic, or corrosive) gas and other gases as well as the transportation and storage of liquefied natural gas. The Office of Pipeline Safety regulates the design, construction, inspection, testing, operation, and maintenance of pipeline facilities. While the Federal government is primarily responsible for developing, issuing, and enforcing pipeline safety regulations, the pipeline safety statutes provide for state assumption of the intrastate regulatory, inspection, and enforcement responsibilities under an annual certification. To qualify for certification, a state must adopt the minimum Federal regulations and may adopt additional or more stringent regulations as long as they are not incompatible.

STATE REGULATIONS

California Building Standards Code

Title 24 of the California Code of Regulations, known as the California Building Standards Code (CBSC) or simply "Title 24," contains the regulations that govern the construction of buildings in California. The CBSC includes 12 parts: California Building Standards Administrative Code, California Building Code, California Residential Building Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Historical Building Code, California Fire Code, California Existing Building Code, California Green Building Standards Code (CAL Green Code), and the California Reference Standards Code. Through the CBSC, the State

provides a minimum standard for building design and construction. The CBSC contains specific requirements for seismic safety, excavation, foundations, retaining walls, and site demolition. It also regulates grading activities, including drainage and erosion control.

California Health and Safety Code

Section 19100 et seq. of the California Health and Safety Code establishes the State's regulations for earthquake protection. This section of the code requires structural designs to be capable of resisting likely stresses produced by phenomena such as strong winds and earthquakes.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 sets forth the policies and criteria of the State Mining and Geology Board, which governs the exercise of governments' responsibilities to prohibit the location of developments and structures for human occupancy across the trace of active faults. The policies and criteria are limited to potential hazards resulting from surface faulting or fault creep within Earthquake Fault Zones, as delineated on maps officially issued by the State Geologist. Working definitions include:

- Fault – a fracture or zone of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side;
- Fault Zone – a zone of related faults, which commonly are braided and sub parallel, but may be branching and divergent. A fault zone has a significant width (with respect to the scale at which the fault is being considered, portrayed, or investigated), ranging from a few feet to several miles;
- Sufficiently Active Fault – a fault that has evidence of Holocene surface displacement along one or more of its segments or branches (last 11,000 years); and
- Well-Defined Fault – a fault whose trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface. The geologist should be able to locate the fault in the field with sufficient precision and confidence to indicate that the required site-specific investigations would meet with some success.

"Sufficiently Active" and "Well Defined" are the two criteria used by the State to determine if a fault should be zoned under the Alquist-Priolo Act.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically-induced landslides. Under the Act, seismic hazard zones are to be mapped by the State Geologist to assist local governments in land use planning. The program and actions mandated by the Seismic Hazards Mapping Act closely resemble those of the Alquist-Priolo Earthquake Fault Zoning Act (which addresses only surface fault-rupture hazards) and are outlined below:

The State Geologist is required to delineate the various "seismic hazard zones."

- Cities and counties, or other local permitting authority, must regulate certain development "projects" within the zones. They must withhold the development permits for a site within a zone until the geologic and soil conditions of the site are investigated and appropriate mitigation measures, if any, are incorporated into development plans.

- The State Mining and Geology Board provides additional regulations, policies, and criteria to guide cities and counties in their implementation of the law. The Board also provides guidelines for preparation of the Seismic Hazard Zone Maps and for evaluating and mitigating seismic hazards.

- Sellers (and their agents) of real property within a mapped hazard zone must disclose that the property lies within such a zone at the time of sale.

Caltrans Seismic Design Criteria

The California Department of Transportation (Caltrans) has Seismic Design Criteria (SDC), which is an encyclopedia of new and currently practiced seismic design and analysis methodologies for the design of new bridges in California. The SDC adopts a performance-based approach specifying minimum levels of structural system performance, component performance, analysis, and design practices for ordinary standard bridges. The SDC has been developed with input from the Caltrans Offices of Structure Design, Earthquake Engineering and Design Support, and Materials and Foundations. Memo 20-1 Seismic Design Methodology (Caltrans 1999) outlines the bridge category and classification, seismic performance criteria, seismic design philosophy and approach, seismic demands and capacities on structural components, and seismic design practices that collectively make up Caltrans' seismic design.

Water Code

Division 7 of the California Water Code, commonly referred to as the Porter-Cologne Water Quality Control Act, created the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB). In addition, water quality responsibilities are established for the SWRCB and RWQCBs.

Surface Mining and Reclamation Act of 1975

The California Department of Conservation Surface Mining and Reclamation Act of 1975 (§ 2710), also known as SMARA, provides a comprehensive surface mining and reclamation policy that permits the continued mining of minerals, as well as the protection and subsequent beneficial use of the mined and reclaimed land. The purpose of SMARA is to ensure that adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition and readily adaptable for alternative land uses. The production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, wildlife, range and forage, as well as aesthetic enjoyment. Residual hazards to public health and safety are eliminated. These goals are achieved through land use planning by allowing a jurisdiction to balance the economic benefits of resource reclamation with the need to provide other land uses.

If a use is proposed that might threaten the potential recovery of minerals from an area that has been classified mineral resource zone 2 (MRZ-2), SMARA would require the jurisdiction to prepare a statement specifying its reasons for permitting the proposed use, provide public notice of these reasons, and forward a copy of the statement to the State Geologist and the State Mining and Geology Board (Cal. Pub. Res. Code Section 2762). Lands classified MRZ-2 are areas that contain identified mineral resources.

Division of Mines and Geology

The California Division of Mines and Geology (DMG) operates within the Department of Conservation. The DMG is responsible for assisting in the utilization of mineral deposits and the identification of geological hazards.

State Geological Survey

Similar to the DMG, the California Geological Survey is responsible for assisting in the identification and proper utilization of mineral deposits, as well as the identification of fault locations and other geological hazards.

LOCAL REGULATIONS

Chapter 17.680, Oil and Gas Production, Brentwood Municipal Code

The purpose of the oil and gas production regulations in the Brentwood Municipal Code is to establish reasonable and uniform limitations, safeguards, and controls for the present operation of and future drilling for and production of oil, gas, and other hydrocarbon substances within the city, so that such activities may be conducted in harmony with other uses of land within the city, thus protecting the people of the city in the enjoyment and use of their property and providing for their comfort, health, safety, and general welfare.

3.6.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on geology, soils, and minerals if it will:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - Rupture of a known earthquake fault;
    - Strong seismic ground shaking;
    - Seismic-related ground failure, including liquefaction; or
    - Landslides.
- Result in substantial soil erosion or the loss of topsoil;
- 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;
- 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;
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water;
- 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; or
- 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.

IMPACTS AND MITIGATION MEASURES

Impact 3.6-1: General Plan implementation has the potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction (Less than Significant)

There are no known active or potentially active faults, or Alquist-Priolo Earthquake Fault Zones, located within the Planning Area. However, there are numerous faults located in the region. Figure 3.6-1 illustrates the location of these faults. These include the Antioch Fault, Calaveras Fault, Coast Range-Sierran Block Boundary Zone, Concord-Green Valley Fault, Greenville-Marsh Creek Fault, Hayward Fault, Mount Diablo Thrust Fault, Pittsburg-Kirby Hills Fault, Rodgers Creek Fault, San Andreas Fault, and the West Napa Fault. Rupture of any of these faults, or of an unknown fault in the region, could cause seismic ground shaking. As a result, future development in the city of

Brentwood may expose people or structures to potential adverse effects associated with a seismic event, including strong ground shaking and seismic-related ground failure.

There are no seismic hazard zones currently mapped in the Planning Area; however, the California Geological Survey estimates a 10 percent probability of exceeding 30-50 percent of gravity at peak ground acceleration over the next 50 years in the Brentwood Planning Area, as well as other communities within eastern Contra Costa County. Moving west toward the Hayward fault, the estimates increase up to 70 percent or more of gravity at peak ground acceleration.

While there are no known active faults located within the city of Brentwood, the area could experience considerable ground shaking generated by faults outside Brentwood. For example, Brentwood could experience intensities of MM VII to VIII generated by seismic events occurring along the Greenville-Marsh Creek Fault or Mount Diablo Thrust Fault (ABAG, 2013). The effect of this intensity level includes: VII) Difficulty standing; Vehicle shaking felt by drivers; Some furniture breaks; and VIII) Difficulty steering vehicles; Houses may shift on foundations.

All projects would be required to comply with the provisions of the California Building Standards Code (CBSC), which requires development projects to: perform geotechnical investigations in accordance with State law, engineer improvements to address potential seismic and ground failure issues, and use earthquake-resistant construction techniques to address potential earthquake loads when constructing buildings and improvements. As future development and infrastructure projects are considered by the City, each project will be evaluated for conformance with the CBSC, General Plan, Zoning Ordinance, and other regulations. Subsequent development and infrastructure would also be analyzed for potential environmental impacts, consistent with the requirements of CEQA. In addition to the requirements associated with the CBSC and the Municipal Code, the General Plan includes policies and actions to address potential impacts associated with seismic activity.

The General Plan policies (listed below) require new land development proposals to avoid unreasonable exposure to geologic hazards, including earthquake damage, subsidence, liquefaction, and expansive soils. All development and construction proposals must be reviewed by the City to ensure conformance with applicable building standards. Development on soils sensitive to seismic activity is only allowed after adequate site analysis, including appropriate siting, design of structure, and foundation integrity. The General Plan policies require geotechnical investigations to be completed prior to approval of any buildings as a means to ensure that these facilities are constructed in a way that mitigates site-specific seismic and/or geological hazards. All future projects are subject to CEQA review to address seismic safety issues and provide adequate mitigation for existing and potential hazards identified. With the implementation of the policies and actions in the General Plan, as well as applicable State and City codes, potential impacts associated with a seismic event, including rupture of an earthquake fault, seismic ground shaking, and liquefaction would be **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy SA 1-1: Regulate development in areas of seismic and geologic hazards to reduce risks to life and property associated with earthquakes, liquefaction, erosion, landslides, and expansive soils.

Policy SA 1-2: Where feasible, require new development to avoid unreasonable exposure to geologic hazards, including earthquake damage, subsidence, liquefaction, and expansive soils.

Policy SA 1-3: Ensure that all new development and construction is reviewed by the City to ensure conformance with applicable building standards related to geologic and seismic safety.

Policy SA 1-4: Require geotechnical investigations to be completed prior to approval of any public safety facilities, such as fire stations, in order to ensure that these critical facilities are constructed in a way that mitigates site-specific seismic and/or geologic hazards.

Policy SA 1-5: Ensure that critical facilities in Brentwood's Planning Area are designed and constructed to withstand the "maximum probable" earthquake and remain in service. Critical facilities include police stations, fire stations, hospitals, and other public or semi-public buildings that house critical first-responders or emergency management personnel.

Policy SA 1-6: Development in areas subject to liquefaction shall be reviewed by qualified soils engineers and geologists prior to development in order to ensure the safety and stability of all construction (see Figure 5.5-2 in the General Plan Existing Conditions Report).

ACTIONS

Action SA 1a: Require the submission of geologic and soils reports for all new developments. The geologic risk areas that are determined from these studies shall have standards established and recommendations shall be incorporated into development.

Action SA 1b: All building code requirements shall be adhered to so as to provide for maximum safety requirements. Inspections for compliance shall be made by the Community Development Department prior to approval for occupancy.

Action SA 1c: Require strict adherence to the requirements of the California Code of Regulations (CCR), Title 24 in all areas of the city and, during the development review process, ensure that public and critical use buildings shall not be located in areas susceptible to potential natural hazards.

Action SA 1d: Any critical use building shall meet earthquake codes and standards.

Action SA 1e: Regularly review the structural integrity of all existing City facilities and, if any facilities are found unsatisfactory, take steps to ensure structural integrity and safety.

Action SA 1h: Annually review revisions to the California Code of Regulations (CCR), Title 24 and consider adoption of updates that include new or revised measures to avoid or reduce the potential for damage to structures and facilities caused by seismic and other geologic hazards.

Action SA 1i: As applications for building permits are received, identify and inspect seismically unsafe buildings and structures, including unreinforced masonry buildings.

Action SA 1j: Explore programs and funding sources that would encourage, assist, or provide incentives to property owners to retrofit their buildings for seismic safety, such as the Unreinforced Masonry (URM) program.

Action SA 1m: Maintain an inventory of all natural hazards, including active faults, Alquist-Priolo Special Study Zones, floodplains, and projected dam failure inundation areas.

Impact 3.6-2: General Plan implementation has the potential to result in substantial soil erosion or the loss of topsoil (Less than Significant)

The General Plan would allow development and improvement projects that would involve some land clearing, mass grading, and other ground-disturbing activities that could temporarily increase soil erosion rates during and shortly after project construction. Construction-related erosion could result in the loss of a substantial amount of nonrenewable topsoil and could adversely affect water quality in nearby surface waters.

Soil erosion data for the city of Brentwood were obtained from the NRCS. The erosion factor Kf varies 0.15 to 0.37, which is considered moderately low to moderate potential for erosion.

As future development and infrastructure projects are considered by the City, each project will be evaluated for conformance with the CBSC, General Plan, Zoning Ordinance, and other regulations. In addition to compliance with City standards and policies, the Regional Water Quality Control Board will require a project specific Storm Water Pollution Prevention Plan (SWPPP) to be prepared for each project that disturbs an area of one acre or larger. The SWPPPs will include project specific best management measures that are designed to control drainage and erosion. Subsequent development and infrastructure projects would also be analyzed for potential environmental impacts, consistent with the requirements of CEQA.

The General Plan includes a range of policies and actions related to development on slopes, revegetation of slopes, erosion and sediment control plans, drainage and erosion requirements, and stabilization of slopes after grading. With the implementation of the policies and actions in the General Plan, as well as applicable State and City requirements, potential impacts associated with erosion and loss of topsoil would be **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy SA 1-1: Regulate development in areas of seismic and geologic hazards to reduce risks to life and property associated with earthquakes, liquefaction, erosion, landslides, and expansive soils.

Policy SA 1-8: Where alterations such as grading and tree or vegetation removal are made to hillside sites, rendering slopes unstable, planting of vegetation or other engineering means shall be encouraged to protect structures at lower elevations.

Policy SA 1-9: The use of drought-tolerant plants for landscaping in hillside areas shall be encouraged as a means to eliminate the need for supplemental watering.

Policy SA 1-10: An erosion and sediment control plan prepared by a civil engineer, or other professional who is qualified to prepare such a plan, shall be submitted as part of any grading permit application for new development. The erosion and sediment control plan shall delineate measures to appropriately and effectively minimize soil erosion and sedimentation, and shall comply with the design standards and construction site control measures contained in Chapter 15.52 (Grading, Erosion and Sediment Control) of the Brentwood Municipal Code.

ACTIONS

Action SA 1f: As part of the development review process, ensure development applications incorporate drainage and erosion standards identified in the Brentwood Municipal Code. Inspections by the Community Development Department and the Public Works Department will ensure compliance.

Action SA 1g: When a change in natural grade or removal of existing vegetation is necessary, appropriate vegetative cover to stabilize slopes and reduce erosion shall be encouraged. This shall be accomplished through the development and design review process.

Impact 3.6-3: General Plan implementation has the potential to result in development 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 (Less than Significant)

Development allowed under the General Plan could result in the exposure of people and structures to conditions that have the potential for adverse effects associated with ground instability or failure. Soils and geologic conditions in the Brentwood Planning Area have the potential for landslides, lateral spreading, subsidence, liquefaction, or collapse. Each are discussed below:

Landslide: Within Contra Costa county, the hillsides have some susceptibility for landslides, while the valleys have a low susceptibility. Figure 3.6-5 illustrates the landslide potential in the vicinity of the Planning Area. Given the relatively level slopes throughout Brentwood, the landslide potential is very low. This is not a significant constraint in the Planning Area. The landslide potential increases in the foothills and mountains to the west and south of the Planning Area.

Lateral Spreading: Lateral spreading generally is a phenomenon where blocks of intact, non-liquefied soil moves down slope on a liquefied substrate of large areal extent. The potential for lateral spreading is present where open banks and unsupported cut slopes provide a free face (unsupported vertical slope face). Ground shaking, especially when inducing liquefaction, may cause lateral spreading toward unsupported slopes. The greatest potential for lateral spreading in the Planning Area is in the hilly terrain to the south and west.

Subsidence: In Contra Costa county, subsidence occurs in the Delta plain and is caused by the natural process of oxidation of island peat soils, resulting in a gradual sinking of the ground. As many of the islands in the Delta (along with their levees) sink in elevation, the levees that protect the island's agricultural and/or residential uses must be raised and reinforced by adding more earth fill to the top of the levees.

Recent evidence indicates that many Delta islands in the region have experienced significant subsidence over the last several decades. For example, it is estimated that Webb Tract in Contra Costa county has subsided up to 17 feet. Most reclaimed portions of the Delta in the county have subsided at least 10 feet. Subsidence in the Planning Area has not been considered a significant issue, although Delta lands to the north and east will continue to be a significant concern.

Liquefaction: Liquefaction potential in the Planning Area varies from very low to high. The area designated "very low" potential for liquefaction is located in hilly area in the west and southwest portion of the Planning Area. Moving to the north and east the potential for liquefaction increases to “moderate.” The northeastern/eastern portion of the Planning Area has a “high” potential for liquefaction. Figure 3.6-2 illustrates the liquefaction potential in the vicinity of the Planning Area.

Collapse: Collapsible soils undergo a rearrangement of their grains and a loss of cementation, resulting in substantial and rapid settlement under relatively low loads. Collapsible soils occur predominantly at the base of mountain ranges, where Holocene-age alluvial fan and wash sediments have been deposited during rapid run-off events. Differential settlement of structures typically occurs when heavily irrigated landscape areas are near a building foundation. Examples of common problems associated with collapsible soils include tilting floors, cracking or separation in structures, sagging floors, and nonfunctional windows and doors. Historically, collapsible soils have not been an issue of concern in Brentwood.

Conclusion: As future development and infrastructure projects are considered by the City of Brentwood, each project will be evaluated for conformance with the CBSC, the General Plan, Zoning Ordinance, and other regulations. Subsequent development and infrastructure projects would also be analyzed for potential environmental impacts, consistent with the requirements of CEQA. Future development and improvement projects would be required to have a specific geotechnical study prepared and incorporated into the improvement design, consistent with the requirements of the State and City codes. In addition to the requirements associated with the CBSC and the Municipal Code, the General Plan includes policies and actions to ensure that development, infrastructure, and other projects address potential ground failure and instability issues through compliance with applicable building standards, identification of potential geologic hazards, preparation of geotechnical studies, and appropriate site analysis and engineering measures to mitigate any identified hazards, including landslides, lateral spreading, liquefaction, and other potential ground failures, to an acceptable level. With the implementation of the policies and actions in the General Plan, as well as applicable State and City codes, potential impacts associated with ground instability or failure would be **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy SA 1-1: Regulate development in areas of seismic and geologic hazards to reduce risks to life and property associated with earthquakes, liquefaction, erosion, landslides, and expansive soils.

Policy SA 1-2: Where feasible, require new development to avoid unreasonable exposure to geologic hazards, including earthquake damage, subsidence, liquefaction, and expansive soils.

Policy SA 1-3: Ensure that all new development and construction is reviewed by the City to ensure conformance with applicable building standards related to geologic and seismic safety.

Policy SA 1-4: Require geotechnical investigations to be completed prior to approval of any public safety facilities, such as fire stations, in order to ensure that these critical facilities are constructed in a way that mitigates site-specific seismic and/or geologic hazards.

Policy SA 1-5: Ensure that critical facilities in Brentwood's Planning Area are designed and constructed to withstand the "maximum probable" earthquake and remain in service. Critical facilities include police stations, fire stations, hospitals, and other public or semi-public buildings that house critical first-responders or emergency management personnel.

Policy SA 1-6: Development in areas subject to liquefaction shall be reviewed by qualified soils engineers and geologists prior to development in order to ensure the safety and stability of all construction (see Figure 5.5-2 in the General Plan Existing Conditions Report).

Policy SA 1-7: Prevent land subsidence and maintain adequate groundwater supplies.

Policy SA 1-8: Where alterations such as grading and tree or vegetation removal are made to hillside sites, rendering slopes unstable, planting of vegetation or other engineering means shall be encouraged to protect structures at lower elevations.

Policy SA 1-9: The use of drought-tolerant plants for landscaping in hillside areas shall be encouraged as a means to eliminate the need for supplemental watering.

Policy SA 1-11: All structures and building foundations located within areas containing expansive soils shall be designed and engineered to comply with the most current version of the California Code of Regulations (CCR), Title 24.

ACTIONS

Action SA 1a: Require the submission of geologic and soils reports for all new developments. The geologic risk areas that are determined from these studies shall have standards established and recommendations shall be incorporated into development.

Action SA 1b: All building code requirements shall be adhered to so as to provide for maximum safety requirements. Inspections for compliance shall be made by the Community Development Department prior to approval for occupancy.

Action SA 1c: Require strict adherence to the requirements of the California Code of Regulations (CCR), Title 24 in all areas of the city and, during the development review process, ensure that

public and critical use buildings shall not be located in areas susceptible to potential natural hazards.

Action SA 1d: Any critical use building shall meet earthquake codes and standards.

Action SA 1e: Regularly review the structural integrity of all existing City facilities and, if any facilities are found unsatisfactory, take steps to ensure structural integrity and safety.

Action SA 1g: When a change in natural grade or removal of existing vegetation is necessary, appropriate vegetative cover to stabilize slopes and reduce erosion shall be encouraged. This shall be accomplished through the development and design review process.

Action SA 1h: Annually review revisions to the California Code of Regulations (CCR), Title 24 and consider adoption of updates that include new or revised measures to avoid or reduce the potential for damage to structures and facilities caused by seismic and other geologic hazards.

Action SA 1i: As applications for building permits are received, identify and inspect seismically unsafe buildings and structures, including unreinforced masonry buildings.

Action SA 1j: Explore programs and funding sources that would encourage, assist, or provide incentives to property owners to retrofit their buildings for seismic safety, such as the Unreinforced Masonry (URM) program.

Action SA 1k: Monitor withdrawal of groundwater, oil, and gas, maintain land elevation records, and regulate overdraft to prevent subsidence.

Action SA 1l: Regulate abandoned wells and the removal of abandoned underground irrigation and drainage systems.

Action SA 1m: Maintain an inventory of all natural hazards, including active faults, Alquist-Priolo Special Study Zones, floodplains, and projected dam failure inundation areas.

Impact 3.6-4: General Plan implementation has the potential to result in development on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property (Less than Significant)

Expansive soil properties can cause substantial damage to building foundations, piles, pavements, underground utilities, and/or other improvements. Structural damage, such as warping and cracking of improvements, and rupture of underground utility lines, may occur if the expansive potential of soils is not considered during the design and construction of all improvements.

Linear extensibility is a method for measuring expansion potential. The expansion potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

The linear extensibility of the soils within Brentwood ranges from low to high. Figure 3.6-4 illustrates the shrink-swell potential of soils in the Planning Area. The majority of the Planning Area has moderate or high expansive soils, including most of the undeveloped land. A small part of the southwestern and northeastern portion of the Planning Area has low expansive soils. The areas with moderate to high expansive soils would require special design considerations due to shrink-swell potentials.

As future development and infrastructure projects are considered by the City, each project will be evaluated for conformance with the CBSC, General Plan, Zoning Ordinance, and other applicable regulations. Subsequent development and infrastructure projects would also be analyzed for potential environmental impacts, consistent with the requirements of CEQA.

The Safety Element of the General Plan establishes policies and actions that are designed to protect from geologic hazards, including expansive soils. Consistency with the General Plan policies and actions will require a site-specific design-level geotechnical investigation, prepared by a licensed professional, and submitted to the City for review and confirmation. A site-specific geotechnical investigation will identify the potential for damage related to expansive soils and non-uniformly compacted fill and engineered fill. If a risk is identified, design criteria and specification options may include removal of the problematic soils, and replacement, as needed, with properly conditioned and compacted fill material that is designed to withstand the forces exerted during the expected shrink-swell cycles and settlements.

Design criteria and specifications set forth in the design-level geotechnical investigation will ensure impacts from problematic soils are minimized. There are no additional significant adverse environmental impacts, apart from those disclosed in the relevant chapters of this Draft EIR, that are anticipated to occur associated with expansive soils. Therefore, this impact is considered **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy SA 1-1: Regulate development in areas of seismic and geologic hazards to reduce risks to life and property associated with earthquakes, liquefaction, erosion, landslides, and expansive soils.

Policy SA 1-2: Where feasible, require new development to avoid unreasonable exposure to geologic hazards, including earthquake damage, subsidence, liquefaction, and expansive soils.

Policy SA 1-3: Ensure that all new development and construction is reviewed by the City to ensure conformance with applicable building standards related to geologic and seismic safety.

Policy SA 1-4: Require geotechnical investigations to be completed prior to approval of any public safety facilities, such as fire stations, in order to ensure that these critical facilities are constructed in a way that mitigates site-specific seismic and/or geologic hazards.

Policy SA 1-6: Development in areas subject to liquefaction shall be reviewed by qualified soils engineers and geologists prior to development in order to ensure the safety and stability of all construction (see Figure 5.5-2 in the General Plan Existing Conditions Report).

Policy SA 1-11: All structures and building foundations located within areas containing expansive soils shall be designed and engineered to comply with the most current version of the California Code of Regulations (CCR), Title 24.

ACTIONS

Action SA 1a: Require the submission of geologic and soils reports for all new developments. The geologic risk areas that are determined from these studies shall have standards established and recommendations shall be incorporated into development.

Action SA 1b: All building code requirements shall be adhered to so as to provide for maximum safety requirements. Inspections for compliance shall be made by the Community Development Department prior to approval for occupancy.

Action SA 1c: Require strict adherence to the requirements of the California Code of Regulations (CCR), Title 24 in all areas of the city and, during the development review process, ensure that public and critical use buildings shall not be located in areas susceptible to potential natural hazards.

Action SA 1h: Annually review revisions to the California Code of Regulations (CCR), Title 24 and consider adoption of updates that include new or revised measures to avoid or reduce the potential for damage to structures and facilities caused by seismic and other geologic hazards.

Impact 3.6-5: General Plan implementation does not have the potential to have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water (Less than Significant)

The Public Works Department's Wastewater Division operates and maintains the City's wastewater treatment plant, a tertiary treatment plant that provides recycled water for a variety of landscape and industrial uses. The plant has an average dry weather flow capacity of 5 mgd and was designed to be expandable to an average dry weather flow capacity of 10 mgd. After wastewater is treated, it is normally discharged into Marsh Creek (a water of the United States and a tributary to the San Joaquin River/Delta) or recycled for irrigation (Bartle Wells Associates, 2007). Periodically, on-site percolation ponds may be used for land disposal of a limited amount of secondary treated effluent.

All new wastewater generated from General Plan land uses will be collected and transmitted to the City's wastewater treatment plant for treatment. There will be no septic tanks or alternative waste water disposal systems utilized for new development planned under the General Plan. There are no additional environmental impacts, apart from those disclosed in the relevant chapters of this EIR, which are anticipated to occur. The following General Plan policies and actions address the provision of wastewater treatment. Therefore, this impact is considered **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy IF 3-1: Ensure adequate sewage conveyance and treatment infrastructure to meet existing and future development.

Policy IF 3-2: Maintain the existing wastewater system on a regular basis to increase the lifespan of the system and ensure public safety.

ACTIONS

Action IF 3a: Periodically review and update the Wastewater Master Plan.

Action IF 3b: Continue to explore alternative uses of recycled wastewater, including irrigation, dust control, soil compaction, fire protection, and investigate new technology for the use of recycled water as it is being developed.

Impact 3.6-6: General Plan implementation could 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 or known mineral resource that would be of value to the region and the residents of the state (Less than Significant)

Within the Planning Area, mineral resources include sand, gravel, coal, oil, and gas. Historically, large amounts of sand were mined from the dune sands of the northern portion of the Planning Area, but competition from sand and gravel pits in the Tracy and Livermore areas caused a gradual decline in the production of Brentwood sands. The sand is yellow-brown in color, fine grained, angular, and generally unconsolidated. Specialty sand has also been mined from Domengine sandstone deposits that traverse the Planning Area between Deer Valley Road to the northwest and the southeast corner of the Planning Area. The Domengine sandstone typically consists of light brown, fine to medium grained, angular, and compact sand, which has a high silica content.

Most of the rock outcrops within the Planning Area are soft, low density, and fine grained. Therefore, they do not yield substantial rip-rap or crushed rock aggregate products. Gravel production in the Planning Area has historically been insignificant. It is possible that some of the massive sandstones exposed along the western portion of the Planning Area may have some limited value for use as rip-rap.

Coal is found within the southern and western portions of the Planning Area, and coal mines were active from 1861 to 1902. The seams of sub-bituminous coal have been mined in the southwestern portion of the Planning Area, near the intersection of Briones Valley Road and Concord Avenue. According to reports by the State Mineralogist, the coal consists of thin seams, one to seven feet thick, diving deep into the earth. Mining extended to great depths along the beds, and consequently the costs became prohibitive. Rising excavation costs combined with competition from higher grade coal and the use of petroleum has limited coal production in the Planning Area.

Oil and gas has been sporadically produced in the region since 1864. The Brentwood oil and gas field is California's northernmost commercial oil-producing area. The field was discovered in June 1962 by Shell, Occidental, and Brazos' joint well, Heidorn 4-4. The area was developed as a gas field until the discovery of oil in the Ginochio 2-16 well in December 1962. By December 1965, there were 50 producing wells in the Brentwood field. Of these, 15 produced predominantly gas with small quantities of associated oil. The other 35 wells produced oil and gas at different ratios.

The active and plugged wells in the Brentwood Planning Area are presented in Figure 3.6-6. Oil and gas is recovered from sands mostly of the Eocene age, at depths of approximately 4,000 feet. The potential for additional oil and gas reserves exists within the Planning Area.

In general, sand is likely the most significant economic mineral deposit found within the Planning Area. It is possible that significant deposits of coal and specialty sand remain in the western portion of the Planning Area, within the Domengine sandstone. Dry gas is presently being produced in the northeast portion of the city, and the potential for additional reserves exists throughout the area.

The General Plan includes two policies and three actions related to mineral resources. Policy COS 5-1 ensures that areas of mineral resources can be mined while productive and are ultimately reused for urbanization or open space. Policy COS 5-2 allows resource extraction of gas, oil, and mineral resources as an interim use. Action COS 5a requires the City to work with property owners to develop reclamation plans for areas with mineral resources. Action COS 5b requires the City to continue to implement, and periodically review/update as necessary, Chapter 17.680 (Oil and Gas Production) of the Brentwood Municipal Code. Action COS 5c requires the City to identify and evaluate areas within Brentwood's Planning Area with potential resource value, including oil, gas, sand, and gravel. With the implementation of these General Plan policies and actions, the impacts on mineral resources would be **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy COS 5-1: Ensure that areas of mineral resources can be mined while productive and are ultimately reused for urbanization or open space.

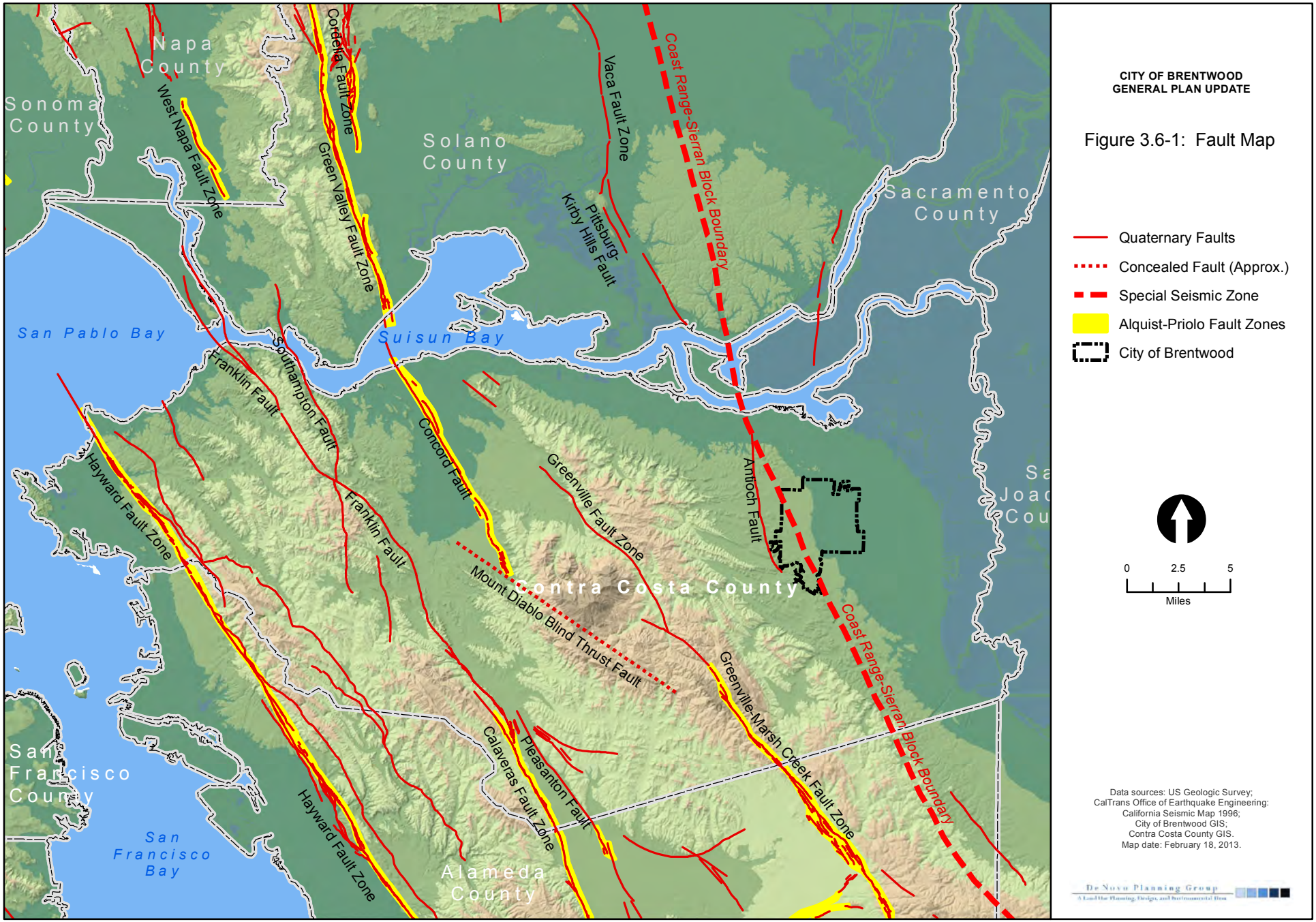
Policy COS 5-2: Allow resource extraction of gas, oil, and mineral resources as an interim use.

ACTIONS

Action COS 5a: Work with property owners to develop reclamation plans for areas with mineral resources.

Action COS 5b: Continue to implement, and periodically review/update as necessary, Chapter 17.680 (Oil and Gas Production) of the Brentwood Municipal Code.

Action COS 5c: Identify and evaluate areas within Brentwood's Planning Area with potential resource value, including oil, gas, sand, and gravel.


Napa County
Sonoma County
Solano County
Sacramento County
San Pablo Bay
Suisun Bay
San Francisco County
San Francisco Bay
Alameda County
Contra Costa County
West Napa Fault Zone
Cordelia Fault Zone
Green Valley Fault Zone
Vaca Fault Zone
Pittsburg-Kirby Hills Fault
Coast Range-Sierran Block Boundary
Franklin Fault
Southampton Fault
Concord Fault
Greenville Fault Zone
Antioch Fault
Hayward Fault Zone
Mount Diablo Blind Thrust Fault
Greenville-Marsh Creek Fault Zone
Calaveras Fault Zone
Pleasanton Fault
CITY OF BRENTWOOD
GENERAL PLAN UPDATE
Figure 3.6-1: Fault Map
Quaternary Faults
Concealed Fault (Approx.)
Special Seismic Zone
Alquist-Priolo Fault Zones
City of Brentwood
0
2.5
5
Miles
Data sources: US Geologic Survey;
CalTrans Office of Earthquake Engineering:
California Seismic Map 1996;
City of Brentwood GIS;
Contra Costa County GIS.
Map date: February 18, 2013.
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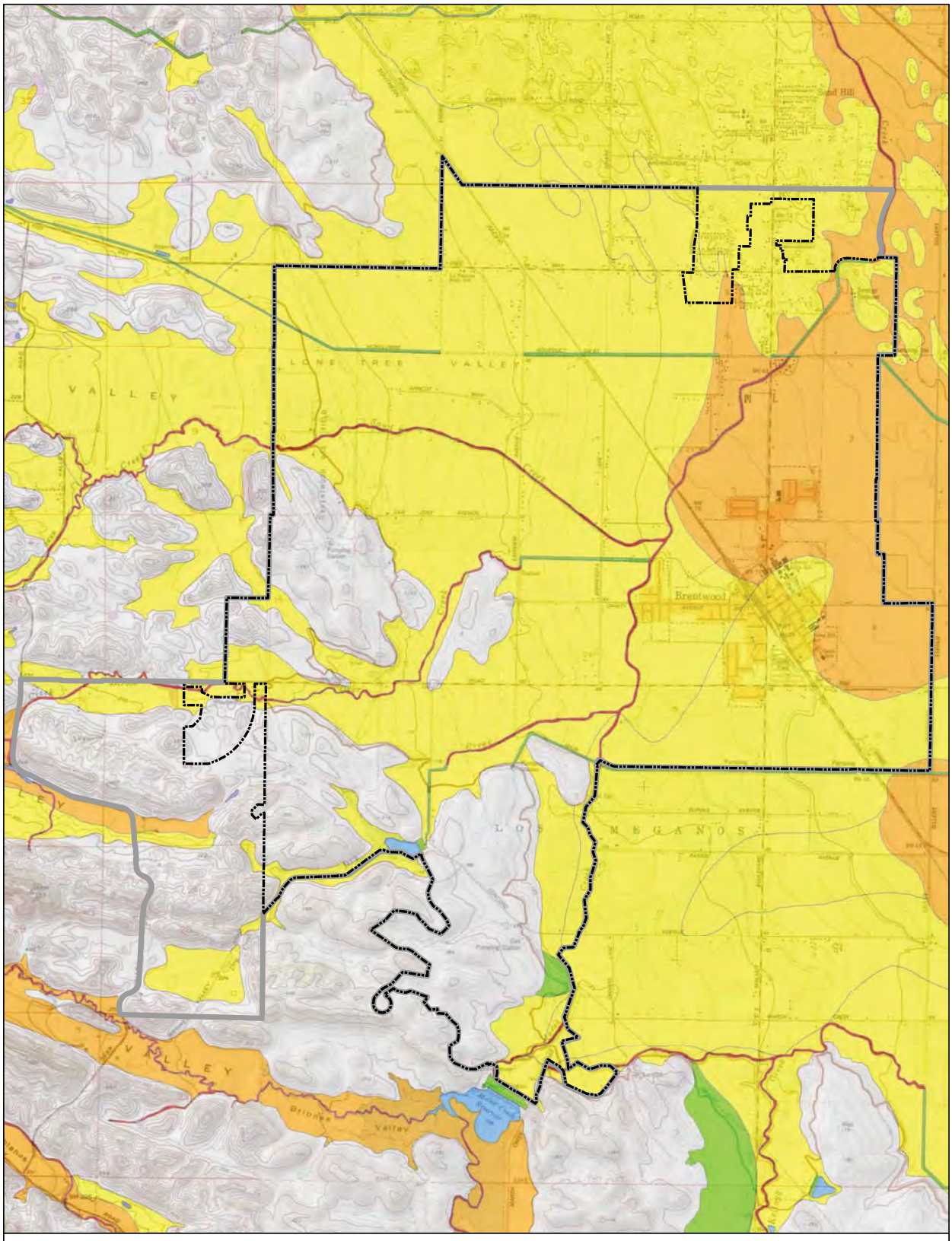

Liquefaction Susceptibility

- Very High
- High
- Moderate
- Low
- Very Low
- Water

Planning Areas

- City of Brentwood
- Brentwood Sphere of Influence

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.6-2: Liquefaction Potential

0 1,000 2,000 4,000
Feet

Data sources: USGS Open-File Report 00-444, Version 1.0, 2000: PRELIMINARY MAPS OF QUATERNARY DEPOSITS AND LIQUEFACTION SUSCEPTIBILITY, NINE-COUNTY SAN FRANCISCO BAY REGION, CALIFORNIA: A DIGITAL DATABASE; National Geographic, iCubed, 2011; City of Brentwood GIS. Map date: February 16, 2013.

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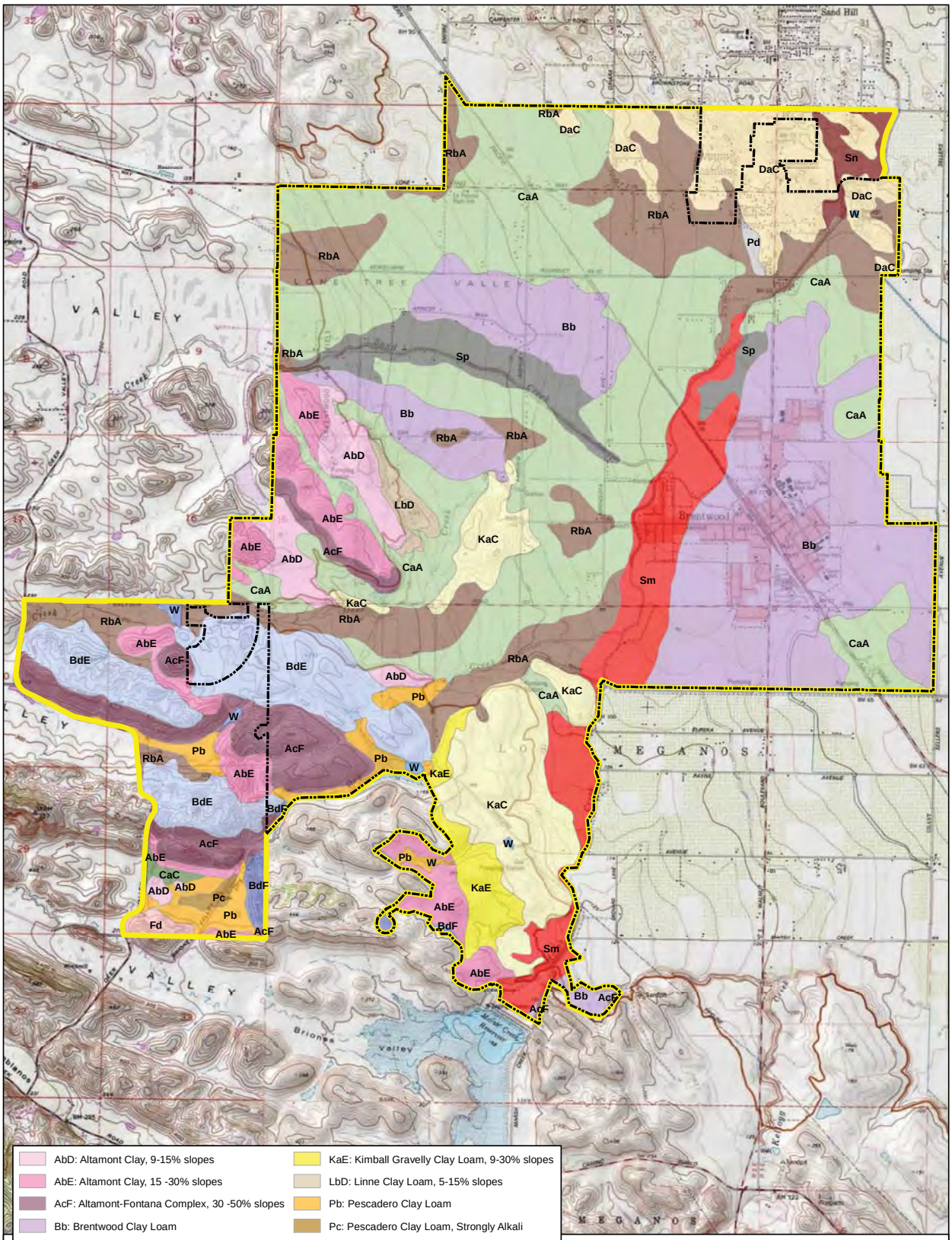

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.6-3: Soils Map

Data sources: U.S. Department of Agriculture, Natural Resources Conservation Service, Publication Date: 20071206: Soil Survey Geographic (SSURGO) database for Contra Costa County, California; City of Brentwood GIS. Map date: February 15, 2013.

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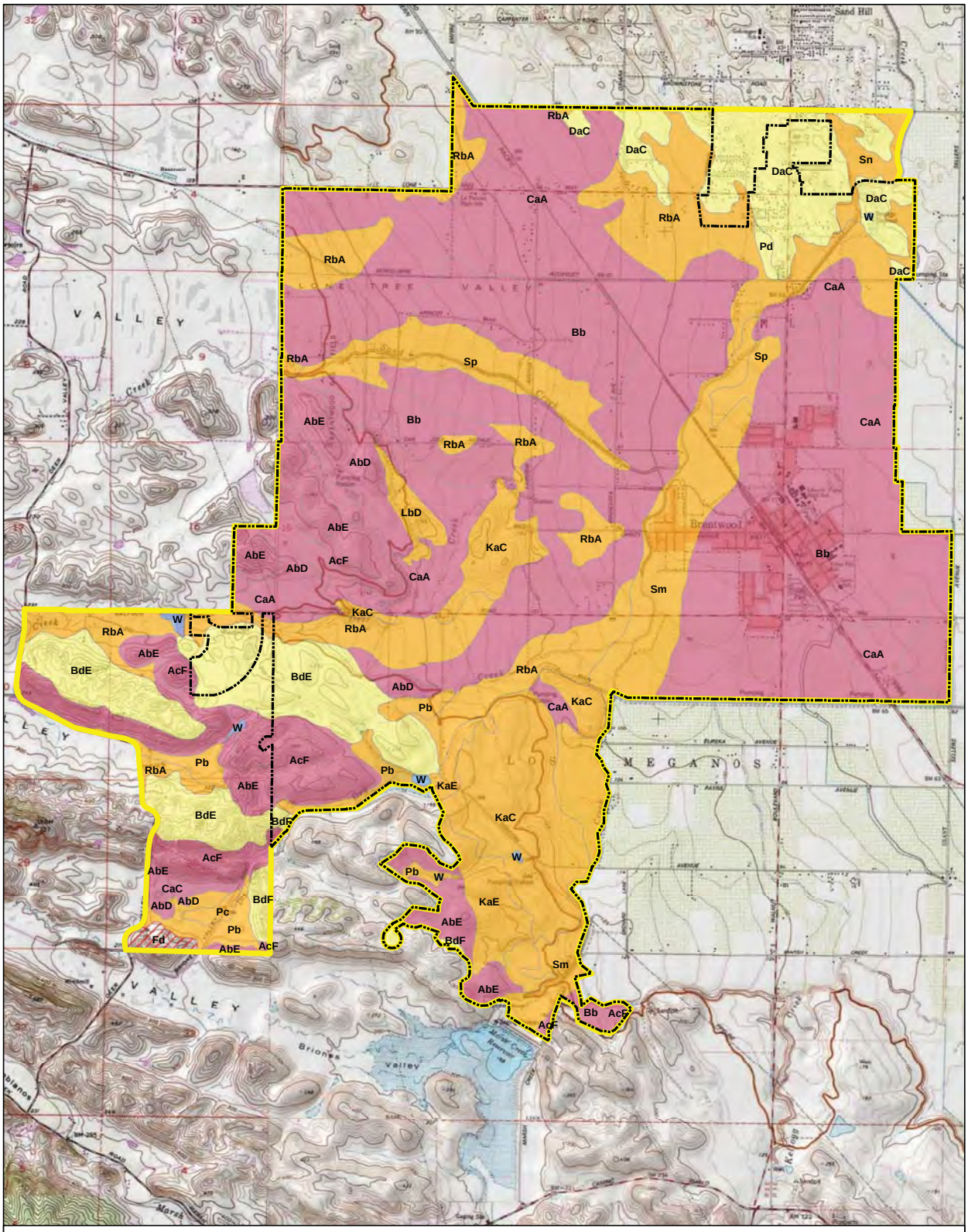

Linear Extensibility

- Low (<3%)
- Moderate (3% - 6%)
- Moderate to High (3% - 9%)
- High (6% - 9%)
- Water
- sfq2py

Planning Areas

- City of Brentwood
- Brentwood Sphere of Influence

Data sources: U.S. Department of Agriculture, Natural Resources Conservation Service, Publication Date: 20071206: Soil Survey Geographic (SSURGO) database for Contra Costa County, California; City of Brentwood GIS. Map date: February 15, 2013.

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.6-4: Shrink-Swell Potential

0 1,000 2,000 4,000 Feet

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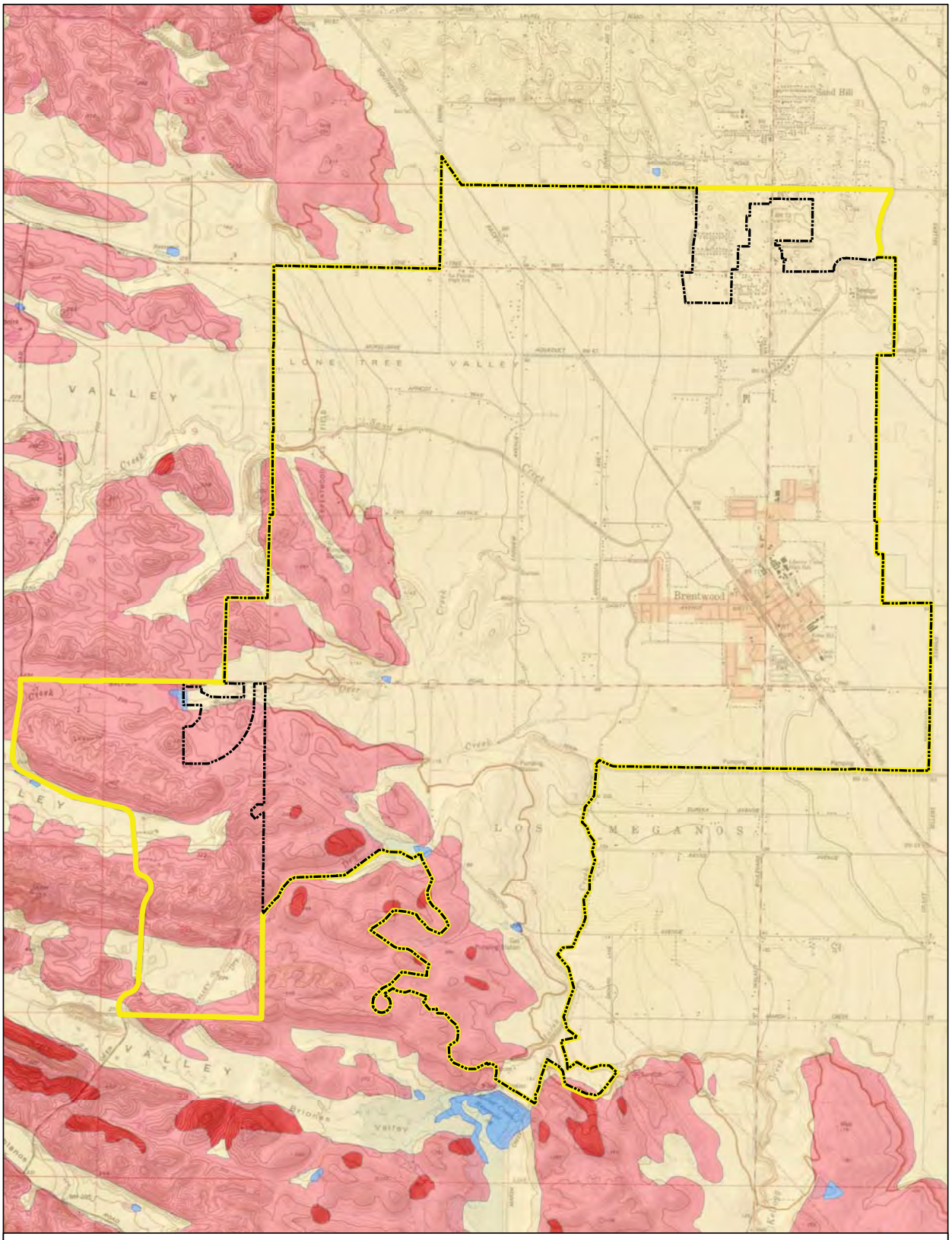

Distribution of Landslides*

- mostly landslide: higher potential
- few landslides: lower potential
- surficial deposits: flat land, little or no potential
- water

Planning Areas

- City of Brentwood
- Brentwood Sphere of Influence

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.6-5: Landslide Potential

0 1,000 2,000 4,000
Feet

* The best available predictor of where movement of slides and earth flows might occur is the distribution of past movements (Nilsen, T.H., and Turner, B.L., 1975, Influence of Rainfall and ancient landslide deposits on recent landslides (1950-71) in urban areas of Contra Costa County, California: U.S. Geological Survey Bulletin 1388)

Data sources: USGS OPEN-FILE 97-745 C: SUMMARY DISTRIBUTION OF SLIDES AND EARTH FLOWS IN CONTRA COSTA COUNTY, CALIFORNIA; National Geographic, iCubed, 2011; City of Brentwood GIS. Map date: February 16, 2013.

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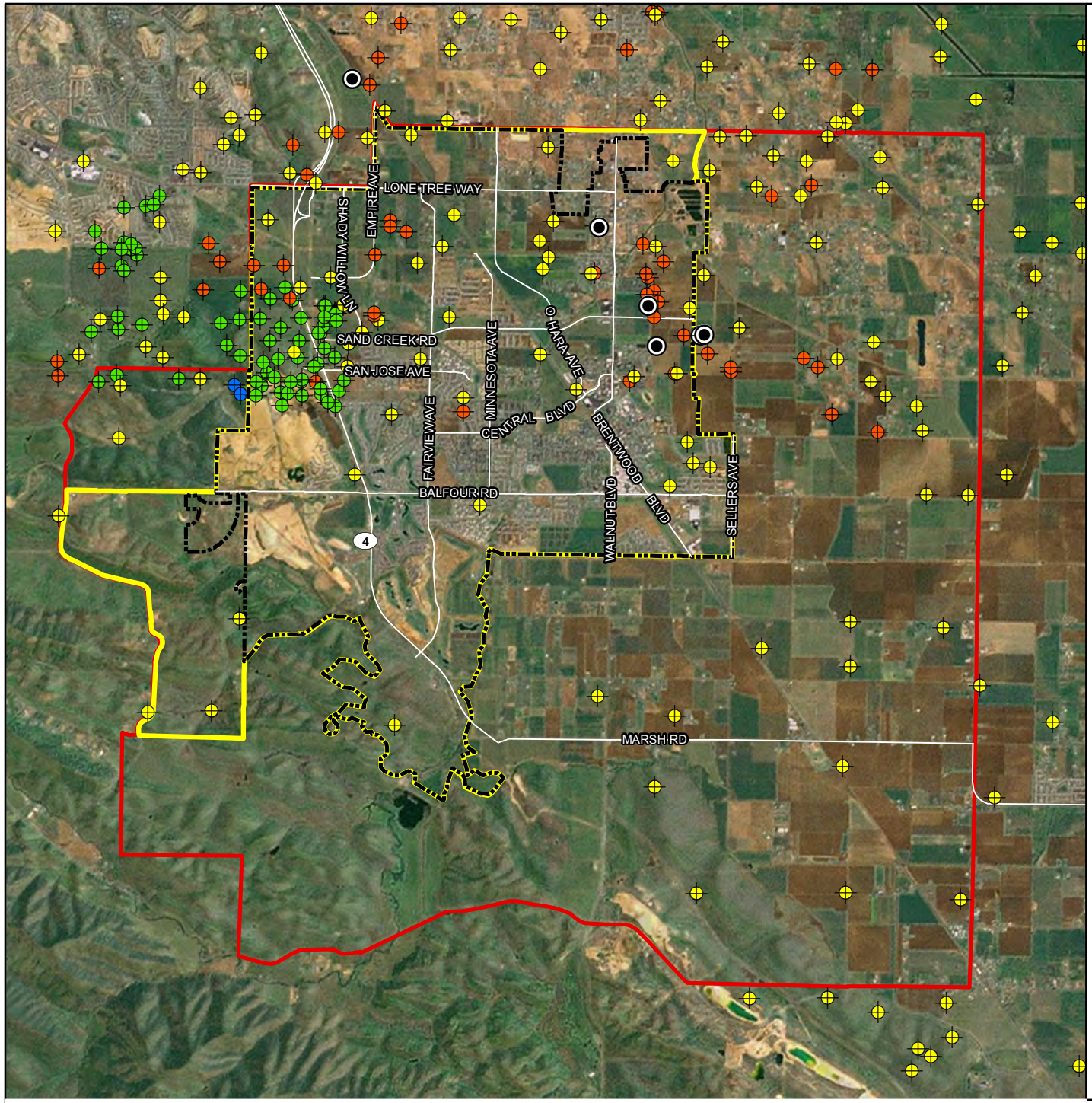

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.6-6: Existing Active Oil and Gas Wells

Well Description

- Active Dry Gas
- Plugged Dry Gas
- Plugged Dry Hole
- Plugged Oil and Gas
- Plugged Water Disposal

Planning Areas

- City of Brentwood
- Brentwood Sphere of Influence
- Brentwood Planning Area

N

0 0.5 1
Miles

Data sources: State of California Department of Conservation, Division of Gas, Oil, and Geothermal Resources; City of Brentwood GIS, Contra Costa County GIS, (c) 2010 Microsoft Corporation and its data suppliers. Map date: February 28, 2013. Revised March 6, 2014.

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This section discusses regional greenhouse gas (GHG) emissions and climate change impacts that could result from implementation of the proposed project. This section provides a background discussion of greenhouse gases and climate change linkages and effects of global climate change. This section is organized with an existing setting, regulatory setting, approach/methodology, and impact analysis.

The analysis and discussion of the GHG and climate change impacts in this section focuses on the proposed project's consistency with local, regional, and statewide climate change planning efforts and discusses the context of these planning efforts as they relate to the proposed project.

As described in greater detail below, emissions of greenhouse gases (GHGs) have the potential to adversely affect the environment in a cumulative context. The emissions from a single project will not cause global climate change, however, GHG emissions from multiple projects throughout the world could result in a cumulative impact with respect to global climate change. Therefore, the analysis of GHGs and climate change is presented in terms of the proposed project's contribution to cumulative impacts related to GHGs and climate change.

Cumulative impacts are the collective impacts of one or more past, present, and future projects that, when combined, result in adverse changes to the environment. In determining the significance of a proposed project's contribution to anticipated adverse future conditions, a lead agency should generally undertake a two-step analysis. The first question is whether the *combined* effects from *both* the proposed project *and* other projects would be cumulatively significant. If the agency answers this inquiry in the affirmative, the second question is whether "the proposed project's *incremental* effects are cumulatively considerable" and thus significant in and of themselves. The cumulative project list for this issue (climate change) comprises anthropogenic (i.e., human-made) GHG emissions sources across the globe and no project alone would reasonably be expected to contribute to a noticeable incremental change to the global climate. However, legislation and executive orders on the subject of climate change in California have established a statewide context and process for developing an enforceable statewide cap on GHG emissions. Given the nature of environmental consequences from GHGs and global climate change, CEQA requires that lead agencies consider evaluating the cumulative impacts of GHGs. Small contributions to this cumulative impact (from which significant effects are occurring and are expected to worsen over time) may be potentially considerable and, therefore, significant.

3.7.1 ENVIRONMENTAL SETTING

GREENHOUSE GASES AND CLIMATE CHANGE LINKAGES

Various gases in the Earth's atmosphere, classified as atmospheric greenhouse gases (GHGs), play a critical role in determining the Earth's surface temperature. Solar radiation enters Earth's atmosphere from space, and a portion of the radiation is absorbed by the Earth's surface. The Earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation.

Naturally occurring greenhouse gases include water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3). Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also greenhouse gases, but they are, for the most part, solely a product of industrial activities. Although the direct greenhouse gases CO_2, CH_4, and N_2O occur naturally in the atmosphere, human activities have changed their atmospheric concentrations. From the pre-industrial era (i.e., ending about 1750) to 2005, concentrations of these three greenhouse gases have increased globally by 36, 148, and 18 percent, respectively (IPCC 2007)[1].

Greenhouse gases, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), ozone (O_3), water vapor, nitrous oxide (N_2O), and chlorofluorocarbons (CFCs).

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, commercial, and agricultural sectors (California Air Resources Board, 2012)[2]. In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (California Air Resources Board, 2012).

As the name implies, global climate change is a global issue. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. California produced 492 million gross metric tons of carbon dioxide equivalents ($MMTCO_2e$) in 2004 (California Energy Commission 2006a)[3]. By 2020, California is projected to produce 507 $MMTCO_2e$ per year.[4]

Carbon dioxide equivalents are a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the

1 Intergovernmental Panel on Climate Change. 2007. "Climate Change 2007: The Physical Science Basis, Summary for Policymakers." http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg1_report_the_physical_science_basis.htm

2 California Air Resources Board. 2012. "Greenhouse Gas Inventory Data, 2000-2009. http://www.arb.ca.gov/cc/inventory/data/data.htm

3 California Energy Commission. 2006a. Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004. http://www.arb.ca.gov/cc/inventory/archive/archive.htm

4 California Air Resources Board. 2010. "Functional Equivalent Document prepared for the California Cap on GHG Emissions and Market-Based Compliance Mechanisms."

greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Consumption of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2008, accounting for 36.9% of total GHG emissions in the state (California Air Resources Board, 2012). This category was followed by the electric power sector (24.8%, including both in-state and out of-state sources) and the industrial sector (21.1%) (California Air Resources Board, 2012).

EFFECTS OF GLOBAL CLIMATE CHANGE

The effects of increasing global temperature are far-reaching and extremely difficult to quantify. The scientific community continues to study the effects of global climate change. In general, increases in the ambient global temperature as a result of increased GHGs are anticipated to result in rising sea levels, which could threaten coastal areas through accelerated coastal erosion, threats to levees and inland water systems, and disruption to coastal wetlands and habitat.

If the temperature of the ocean warms, it is anticipated that the winter snow season would be shortened. Snowpack in the Sierra Nevada provides both water supply (runoff) and storage (within the snowpack before melting), which is a major source of supply for the state. The snowpack portion of the supply could potentially decline by 70% to 90% by the end of the 21st century (California Climate Change Center (CCCC), 2006)[5]. This phenomenon could lead to significant challenges securing an adequate water supply for a growing state population. Further, the increased ocean temperature could result in increased moisture flux into the state; however, since this would likely increasingly come in the form of rain rather than snow in the high elevations, increased precipitation could lead to increased potential and severity of flood events, placing more pressure on California's levee/flood control system.

Sea level has risen approximately seven inches during the last century and it is predicted to rise an additional 22 to 35 inches by 2100, depending on the future GHG emissions levels (CCCC 2006). If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion and disruption of wetlands (CCCC 2006). As the existing climate throughout California changes over time, mass migration of species, or failure of species to migrate in time to adapt to the perturbations in climate, could also result. Under the emissions scenarios of the Climate Scenarios report (CCCC 2006), the impacts of global warming in California are anticipated to include, but are not limited to, the following:

PUBLIC HEALTH

Temperatures in California are projected to rise significantly over the twenty-first century (CCCC 2006). The estimates in the magnitude of warming vary due to uncertainties in climate sensitivity, differences in modeling approaches, and differences in future emissions scenarios (CCCC 2006).

5 California Climate Change Center. 2006. Scenarios of Climate Change in California: An Overview. http://www.climatechange.ca.gov/climate_action_team/reports/

Given the range in projected emissions and temperature increases, the California Climate Change Center has presented temperature increase estimates in the low range, medium range, and high range to reflect the variations in the modeling of future conditions. Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation are projected to increase from 25% to 35% under the lower warming range and to 75% to 85% under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55% more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming scenario, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100, which provides a contextual background for understanding temperature increases throughout all areas of California. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures will increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

WATER RESOURCES

A vast network of man-made reservoirs and aqueducts capture and transport water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snow pack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snow pack, increasing the risk of summer water shortages.

The state's water supplies are also at risk from rising sea levels. An influx of saltwater would degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta, a major state fresh water supply to significant population centers throughout California, and a key water supply for much of California's agricultural economy, which provides food sources for much of the state. Global warming is also projected to seriously affect agricultural areas, with California farmers projected to lose as much as 25% of the water supply they need; decrease the potential for hydropower production within the state (although the effects on hydropower are uncertain); and seriously harm winter tourism. Under the lower warming range, the snow dependent winter recreational season at lower elevations could be reduced by as much as one month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing, snowboarding, and other snow dependent recreational activities.

If GHG emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snow pack by as much as 70% to 90%. Under the lower warming scenario, snow pack losses are expected to be only half as

large as those expected if temperatures were to rise to the higher warming range. How much snow pack will be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snow pack would pose challenges to water managers, hamper hydropower generation, and nearly eliminate all skiing and other snow-related recreational activities.

AGRICULTURE

Increased GHG emissions are expected to cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. Although higher carbon dioxide levels can stimulate plant production and increase plant water-use efficiency, California's farmers will face greater water demand for crops and a less reliable water supply as temperatures rise.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures are likely to worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits, and nuts.

Crop growth and development will be affected, as will the intensity and frequency of pest and disease outbreaks. Rising temperatures will likely aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

In addition, continued global warming will likely shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Should range contractions occur, it is likely that new or different weed species will fill the emerging gaps. Continued global warming is also likely to alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

FORESTS AND LANDSCAPES

Global warming is expected to alter the distribution and character of natural vegetation thereby resulting in a possible increased risk of large of wildfires. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55%, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. For example, if precipitation increases as temperatures rise, wildfires in southern California are expected to increase by approximately 30% toward the end of the century. In contrast, precipitation decreases could increase wildfires in northern California by up to 90%.

Moreover, continued global warming will alter natural ecosystems and biological diversity within the state. For example, alpine and sub-alpine ecosystems are expected to decline by as much as

60% to 80% by the end of the century as a result of increasing temperatures. The productivity of the state's forests is also expected to decrease as a result of global warming.

RISING SEA LEVELS

Rising sea levels, more intense coastal storms, and warmer water temperatures will increasingly threaten the state's coastal regions. Under the higher warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.

ENERGY CONSUMPTION

The consumption of nonrenewable energy (primarily gasoline and diesel fuel) associated with the operation of passenger, public transit, and commercial vehicles results in GHG emissions that ultimately result in global climate change. Alternative fuels such as natural gas, ethanol, and electricity (unless derived from solar, wind, nuclear, or other energy sources that do not produce carbon emissions) also result in GHG emissions and contribute to global climate change.

Electricity Consumption

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. Approximately 71 percent of the electrical power needed to meet California's demand is produced in the state. Approximately 29 percent of its electricity demand is imported from the Pacific Northwest and the Southwest (California Energy Commission, 2012)[6]. In 2010, California's in-state generated electricity was derived from natural gas (53.4 percent), large hydroelectric resources (14.6 percent), coal (1.7 percent), nuclear sources (15.7 percent), and renewable resources that include geothermal, biomass, small hydroelectric resources, wind, and solar (14.6 percent) (California Energy Commission, 2012).

According to the California Energy Commission (CEC), total statewide electricity consumption increased from 166,979 gigawatt-hours (GWh) in 1980 to 228,038 GWh in 1990, which is an estimated annual growth rate of 3.66 percent. The statewide electricity consumption in 1997 was 246,225 GWh, reflecting an annual growth rate of 1.14 percent between 1990 and 1997 (California Energy Commission Energy Almanac, 2012). Statewide consumption was 274,985 GWh in 2010, an annual growth rate of 0.9 percent between 1997 and 2010.

Oil

The primary energy source for the United States is oil, which is refined to produce fuels like gasoline, diesel, and jet fuel. Oil is a finite, nonrenewable energy source. World consumption of petroleum products has grown steadily in the last several decades. As of 2009, world consumption of oil had reached 96 million barrels per day. The United States, with approximately five percent of

6 California Energy Commission (2012). Energy Almanac. Retrieved August 2012, from http://energyalmanac.ca.gov/overview/index.html

the world's population, accounts for approximately 19 percent of world oil consumption, or approximately 18.6 million barrels per day (The World Factbook 2009, Washington, DC: Central Intelligence Agency, 2009). The transportation sector relies heavily on oil. In California, petroleum based fuels currently provide approximately 96 percent of the state's transportation energy needs (California Energy Commission, 2012).

Natural Gas

Natural gas supplies are derived from underground sources and brought to the surface at gas wells. Once it is extracted, gas is purified and the odorant that allows gas leaks to be detected is added to the normally odorless gas. Natural gas suppliers, such as PG&E, then send the gas into transmission pipelines, which are usually buried underground. Compressors propel the gas through the pipeline system, which delivers it to homes and businesses.

The state produces approximately 12 percent of its natural gas, while obtaining 22 percent from Canada and 65 percent from the Rockies and the Southwest (California Energy Commission, 2012). In 2006, California produced 325.6 billion cubic feet of natural gas (California Energy Commission, 2012).

3.7.2 REGULATORY SETTING

FEDERAL

Clean Air Act

The Federal Clean Air Act (FCAA) was first signed into law in 1970. In 1977, and again in 1990, the law was substantially amended. The FCAA is the foundation for a national air pollution control effort, and it is composed of the following basic elements: national ambient air quality standards (NAAQS) for criteria air pollutants, hazardous air pollutant standards, state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

The EPA is responsible for administering the FCAA. The FCAA requires the EPA to set NAAQS for several problem air pollutants based on human health and welfare criteria. Two types of NAAQS were established: primary standards, which protect public health, and secondary standards, which protect the public welfare from non-health-related adverse effects such as visibility reduction.

Federal Climate Change Policy

According to the EPA, "the United States government has established a comprehensive policy to address climate change" that includes slowing the growth of emissions; strengthening science, technology, and institutions; and enhancing international cooperation. To implement this policy, "the Federal government is using voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science." The Federal government's goal is to reduce the greenhouse gas (GHG) intensity (a measurement of GHG emissions per unit of economic activity) of the American economy by 18 percent over the 10-year period from 2002 to

2012. At the time of this writing, a quantification of the effectiveness of these policies at the national level is not available. In addition, the EPA administers multiple programs that encourage voluntary GHG reductions, including "ENERGY STAR," "Climate Leaders," and Methane Voluntary Programs. However, as of this writing, there are no adopted Federal plans, policies, regulations, or laws directly regulating GHG emissions.

STATE

Assembly Bill 1493

In response to AB 1493, CARB approved amendments to the California Code of Regulations (CCR) adding GHG emission standards to California's existing motor vehicle emission standards. Amendments to CCR Title 13 Sections 1900 (CCR 13 1900) and 1961 (CCR 13 1961), and adoption of Section 1961.1 (CCR 13 1961.1) require automobile manufacturers to meet fleet average GHG emission limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes beginning with the 2009 model year. Emission limits are further reduced each model year through 2016. For passenger cars and light-duty trucks 3,750 pounds or less loaded vehicle weight (LVW), the 2016 GHG emission limits are approximately 37 percent lower than during the first year of the regulations in 2009. For medium-duty passenger vehicles and light-duty trucks 3,751 LVW to 8,500 pounds gross vehicle weight (GVW), GHG emissions are reduced approximately 24 percent between 2009 and 2016.

CARB requested a waiver of Federal preemption of California's Greenhouse Gas Emissions Standards. The intent of the waiver is to allow California to enact emissions standards to reduce carbon dioxide and other greenhouse gas emissions from automobiles in accordance with the regulation amendments to the CCRs that fulfill the requirements of AB 1493. The EPA granted a waiver to California to implement its greenhouse gas emissions standards for cars.

Assembly Bill 1007

Assembly Bill 1007 (Pavley, Chapter 371, Statutes of 2005) directed the CEC to prepare a plan to increase the use of alternative fuels in California. As a result, the CEC prepared the State Alternative Fuels Plan in consultation with Federal, State, and local agencies. The plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. The Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce greenhouse gas emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

California Executive Orders S-3-05 and S-20-06, and Assembly Bill 32

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: (1) 2000 levels by 2010; (2) 1990 levels by 2020; and (3) 80% below 1990 levels by 2050.

In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs State agencies to begin implementing AB 32, including the recommendations made by the State's Climate Action Team.

Assembly Bill 32- Climate Change Scoping Plan

On December 11, 2008 CARB adopted its *Climate Change Scoping Plan* (Scoping Plan), which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. The Scoping Plan contains the main strategies California will implement to reduce CO_2e emissions by 169 million metric tons (MMT), or approximately 30 percent, from the state's projected 2020 emissions level of 596 MMT of CO_2e under a business-as-usual scenario. (This is a reduction of 42 MMT CO_2e, or almost 10 percent, from 2002–2004 average emissions, but requires the reductions in the face of population and economic growth through 2020.) The Scoping Plan also breaks down the amount of GHG emissions reductions CARB recommends for each emissions sector of the state's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e),
- the Low-Carbon Fuel Standard (15.0 MMT CO_2e),
- energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO_2e), and
- a renewable portfolio standard for electricity production (21.3 MMT CO_2e).

California Strategy to Reduce Petroleum Dependence (AB 2076)

In response to the requirements of AB 2076 (Chapter 936, Statutes of 2000), the CEC and the CARB developed a strategy to reduce petroleum dependence in California. The strategy, *Reducing California's Petroleum Dependence*, was adopted by the CEC and CARB in 2003. The strategy recommends that California reduce on-road gasoline and diesel fuel demand to 15 percent below 2003 demand levels by 2020 and maintain that level for the foreseeable future; the Governor and Legislature work to establish national fuel economy standards that double the fuel efficiency of new cars, light trucks, and sport utility vehicles (SUVs); and increase the use of non-petroleum fuels to 20 percent of on-road fuel consumption by 2020 and 30 percent by 2030.

Governor's Low Carbon Fuel Standard (Executive Order S-01-07)

Executive Order S-01-07 establishes a statewide goal to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 through establishment of a Low Carbon Fuel Standard. The Low Carbon Fuel Standard is incorporated into the State Alternative Fuels Plan and

is one of the proposed discrete early action GHG reduction measures identified by CARB pursuant to AB 32.

Senate Bill 97 (SB 97)

Senate Bill 97 (Chapter 185, 2007) required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the State CEQA Guidelines for addressing greenhouse gas emissions. OPR prepared its recommended amendments to the State CEQA Guidelines to provide guidance to public agencies regarding the analysis and mitigation of greenhouse gas emissions and the effects of greenhouse gas emissions in draft CEQA documents. The Amendments became effective on March 18, 2010.

Senate Bill 375

Senate Bill 375 (Stats. 2008, Ch. 728) was built on AB 32 (California's 2006 climate change law). SB 375's core provision is a requirement for regional transportation agencies to develop a Sustainable Communities Strategy (SCS) in order to reduce GHG emissions from passenger vehicles. The SCS is one component of the existing Regional Transportation Plan (RTP).

On July 18, 2013 the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) adopted Plan Bay Area, an integrated transportation and land-use strategy through 2040 that marks the nine-county region's first long-range plan to meet the requirements of Senate Bill 375, which calls on each of the state's 18 metropolitan areas to develop a Sustainable Communities Strategy to accommodate future population growth and reduce greenhouse gas emissions from cars and light trucks. Working in collaboration with cities and counties, Plan Bay Area advances initiatives to expand housing and transportation choices, create healthier communities, and build a stronger regional economy.

Additionally, SB 375 modified the state's Housing Element Law to achieve consistency between the land use pattern outlined in the SCS and the Regional Housing Needs Assessment allocation. The legislation also substantially improved cities' and counties' accountability for carrying out their housing element plans.

3.7.3 IMPACTS AND MITIGATION MEASURES

GHG THRESHOLDS OF SIGNIFICANCE AND METHODOLOGY

Analysis Approach

The California Office of Planning and Research (OPR) recommends that lead agencies under CEQA make a good-faith effort, based on available information, to estimate the quantity of GHG emissions that would be generated by a proposed project, including the emissions associated with construction activities, stationary sources, vehicular traffic, and energy consumption; to determine whether the impacts have the potential to result in a significant project or cumulative environmental impact; and, where feasible mitigation is available, to mitigate any project or cumulative impact determined to be potentially significant. More recently, OPR prepared amendments to the State CEQA Guidelines, pursuant to SB 97 (Statutes of 2007) for adoption by

the California Natural Resources Agency. The amendments added several provisions reinforcing the requirements to assess a project's GHG emissions as a contribution to the cumulative impact of climate change. The amendments went into effect on March 18, 2010.

Specifically, CEQA Guidelines Section 15064.4, as amended March 18, 2010, states:

(a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

> *(1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model or methodology it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or*
>
> *(2) Rely on a qualitative analysis or performance based standards.*

(b) A lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:

> *(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.*
>
> *(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.*
>
> *(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.*

THRESHOLDS OF SIGNIFICANCE

Per Appendix G of the CEQA Guidelines, climate change-related impacts are considered significant if implementation of the proposed project under consideration would do any of the following:

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

In order to determine whether or not the proposed project would generate GHG emissions that may have a significant impact on the environment, this EIR relies on the project's consistency with the GHG reduction strategies established by the AB 32 Scoping Plan and the associated guidance document prepared by the California Air Pollution Control Officers Association (CAPCOA). In June 2009 CAPCOA published the *Model Policies for Greenhouse Gases in General Plans*. This document includes recommended policy guidance and techniques that may be implemented by cities and counties during the preparation of general plan updates. The incorporation of the various policy recommendations included in this document into local general plans will assist the State in meeting the GHG reductions goals established by AB 32. The Bay Area Air Quality Management District recommends that measures from the 2009 CAPCOA publication be incorporated into general plans as an effective means of reducing GHG emissions from plan-level documents.

AB 32 and S-3-05 target the reduction of statewide emissions. It should be made clear that AB 32 and S-3-05 do not specify that the emissions reductions should be achieved through uniform reduction by geographic location or by emission source characteristics. The City of Brentwood has determined that the establishment of a numerical threshold of significance is not appropriate for the General Plan GHG analysis. Consistent with the guidance provided in CEQA Guidelines Section 15064.4(a)(2), Brentwood has prepared this EIR in a manner which includes a quantification of the cumulative General Plan buildout GHG emissions before and after the implementation of mitigation measures, as well as a qualitative analysis and discussion of the General Plan's consistency with AB 32 and the associated guidance document prepared by the California Air Pollution Control Officers Association (CAPCOA).

GHG IMPACTS AND MITIGATION MEASURES

Impact 3.7-1: General Plan implementation could generate GHGs, either directly or indirectly, that may have a significant effect on the environment (Less than Significant)

Implementation of the General Plan would not directly result in the creation of GHG emissions. However, subsequent development allowed under the General Plan would result in new projects that would increase GHG emissions in the Brentwood Planning Area.

There are a variety of ways in which a general plan could contribute to climate change and result in the generation of GHGs. Sprawling land use patterns that place residences far from employment and retail centers can result in increased vehicle miles traveled (VMT), which increase GHG generation. The conversion of forest lands and open space areas into urbanized uses removes vegetation and trees that have positive carbon sequestration value. Imbalances between local jobs and housing can result in increased commute times and increased VMT associated with longer travel distances between home and work.

CAPCOA has identified a number of key opportunities related to each mandatory element of a general plan, as well as optional elements of a general plan, that may assist in a reduction of GHG emissions associated with land use planning decisions and general plan implementation. These key policy recommendations are summarized below, and are followed by a list of policies and actions contained in the Brentwood General Plan that support or implement these recommendations. It is important to note that the CAPCOA recommendations are not mandatory, and were developed to be general enough to apply to different local agencies throughout California; therefore, not all of the recommendations would necessarily apply to, or be appropriate for, Brentwood.

CAPCOA GENERAL PLAN RECOMMENDATIONS

- Foster land use intensity near, along with connectivity to, retail and employment centers and services to reduce vehicle miles traveled and increase the efficiency of delivery of services through adoption and implementation of smart growth principles and policies;
- Improve the local jobs/housing balance to reduce vehicle miles traveled;
- Zone for appropriate mixed use development to encourage walking and bicycling for short trips, rather than vehicles;
- Link residential and commercial development to transit facilities;
- Reduce parking requirements to facilitate higher density development that fosters access by walking, biking and public transit;
- Identify potential sites for renewable energy facilities and transmission lines;
- Promote recycling to reduce waste and energy consumption;
- Identify appropriate sites for waste recovery facilities to minimize escape of GHGs;
- Conserve natural lands for carbon sequestration;
- Identify lands suitable for wind power generation;
- Conserve water to promote energy efficiency;
- Promote recycling and waste recovery;
- Promote urban forestry and reforestation as feasible;
- Identify and prioritize infrastructure improvements needed to support increased use of alternatives to private vehicle travel, including transit, bicycle, and pedestrian modes;
- Coordinate with adjacent municipalities, transit providers, and regional transportation planning agencies to develop mutual policies and funding mechanisms to increase the use of alternative transportation;
- Establish higher priorities for transit funding relative to street and road construction and maintenance;
- Incorporate “Complete Streets” policies that foster equal access by all users, including pedestrians and bicyclists;
- Promote linkages between development locations and transportation facilities;
- Preserve transportation corridors for renewable energy transmission and for new transit lines;
- Identify appropriate locations for intermodal transportation stations;
- Identify opportunities, in cooperation with transit providers, to provide financing for transit operations and maintenance;

- Identify existing and potential future urban growth boundaries to limit sprawling development patterns and foster a more compact urban form;
- Conserve natural lands for carbon sequestration;
- Promote trail systems to facilitate bicycle and pedestrian trips in lieu of vehicle travel;
- Identify sites for higher density housing closer to employment centers, retail and services, and transit facilities;
- Identify sites for affordable housing for workers close to employment centers;
- Establish or support programs to assist in the energy-efficient retrofitting of older affordable housing units;
- Balance additional upfront costs for energy efficiency and affordable housing economic considerations by providing or supporting programs to finance energy-efficient housing;
- Energy-efficiency requirements for residential, commercial, and industrial construction under local jurisdiction that exceed current standards;
- Facilitate residential and commercial renewable energy facilities (solar array installations, individual wind energy generators, etc.);
- Promote cogeneration facilities for combined heating and electricity;
- Facilitate renewable energy facilities and transmission line siting;
- Establish energy-efficiency standards for public facilities;
- Incorporate urban design principles that promote higher residential densities in attractive forms with easily accessible parks and recreation opportunities nearby;
- Use urban design standards to facilitate clustered, higher-density, mixed use communities with greater potential for transit ridership, alternatives to vehicle travel, and shorter trips;
- Establish policies and design principles to incorporate inviting public spaces in high density, mixed use communities;
- Incorporate "Complete Streets" policies that foster equal access by all users, including pedestrians and bicyclists;
- Promote water-efficient and energy-efficient housing and commercial areas;
- Incorporate water conservation measures for municipal operations and throughout the community to reduce GHG emissions from pumping and water delivery;
- Adopt policies and standards to facilitate water recycling for use on landscaping, agricultural operations, and other applications where potable water is not required, to reduce pumping-related GHG emissions;
- Establishment of minimum parcel sizes for agricultural lands outside of Agricultural Preserves and restrictions on non-agriculture related development and uses on agricultural parcels to enhance the viability of local agriculture and prevent additional sprawl development that increases dependence on and emissions from private vehicles;
- Development of policies and incentives (e.g., carbon credit programs) to promote voluntary preservation of farmland for carbon sink purposes;
- Adoption of policies and programs that facilitate local farmers markets and farmer co-ops that allow residents to purchase local farm goods and reduce emissions from transportation of agricultural products; and
- Support for agricultural industries that reduce the need to move agricultural products long distances for processing or packaging.

The CAPCOA recommendations listed above are grounded in the principles of developing compact communities with a mix of land uses, providing a range of alternative transportation opportunities, conserving areas of open space lands, including agricultural lands, conserving water resources, and reducing energy consumption.

The Brentwood General Plan was developed with extensive input from the community. The core themes expressed by the community for inclusion in the General Plan closely mirror the policy priorities established by CAPCOA and AB 32. More specifically, the General Plan promotes a compact urban form that prioritizes the preservation of agricultural lands, natural resources, and open space lands. The General Plan also prioritizes the creation of more local quality jobs, which would improve the jobs-housing balance in Brentwood, and provide increased opportunities for Brentwood residents to work locally, rather than commute to jobs outside of the city. The General Plan includes a robust policy set aimed at providing "complete streets" and transportation options that support a wide range of mobility choices, including alternatives to single-passenger vehicles.

In order to determine if the proposed project would generate GHGs that may have a significant effect on the environment, Brentwood has relied on the proposed project's consistency with previously adopted plans and programs aimed at reducing GHG levels both locally and regionally. In California, the primary legislation related to statewide GHG reduction targets is AB 32, which calls for reducing statewide GHG emissions to 1990 levels by 2020.

The California Emission Estimator Model (CalEEMod)^{TM} (v.2013.2.2) was used to estimate project-level operational GHG emissions associated with existing conditions, full buildout of the General Plan within the city limits, and full buildout of the General Plan within the Brentwood Planning Area.

GHG emissions generated by buildout of the General Plan Land Use Map within the city limits and the Planning Area would consist primarily of CO_2 emissions, with very limited quantities of methane (CH_4) also generated. Carbon dioxide equivalents (CO_2e) provide a universal standard of measurement against which the impacts of releasing (or avoiding the release of) different greenhouse gases can be evaluated. Every greenhouse gas has a Global Warming Potential (GWP), a measurement of the impact that particular gas has on 'radiative forcing'; that is, the additional heat/energy which is retained in the Earth's ecosystem through the addition of this gas to the atmosphere.

Table 3.7-1 shows the CO_2e emissions, which include mobile source, area source, and energy emissions that would result from operations under existing conditions within Brentwood. Tables 3.7-2 and 3.7-3 show CO_2e emissions associated with buildout of the General Plan within the city limits and the Planning Area, respectively.

The full calculations, inputs, and assumptions are provided in Appendix B. CO_2e emissions are presented prior to the implementation of the GHG emissions reductions measures contained in the Conservation and Open Space Element of the General Plan (identified below), and following implementation of the policies and actions identified below. The emissions calculations presented below assume implementation of the policies and actions that are immediately available to the

City of Brentwood in the near-term. As such, these estimates are considered a "worst-case" scenario, and do not account for additional GHG emissions reductions that may be achieved following adoption and implementation of a local climate action plan.

TABLE 3.7-1: GHG EMISSIONS UNDER EXISTING CONDITIONS

EMISSIONS CATEGORY	*UNMITIGATED CO2E (METRIC TONS/YEAR)*	*MITIGATED CO2E (METRIC TONS/YEAR)*
Area Source GHG Emissions	3,281.0	1,421.0
Energy Source GHG Emissions	113,053.2	111,917.1
Mobile Source GHG Emissions	365,936.8	365,936.8
Waste Source GHG Emissions	26,806.5	26,806.5
Water Usage GHG Emissions	7,617.8	6,359.7
Total Operational GHG Emissions	**516,695.3**	**512,441.2**

SOURCES: CALEEMOD (V.2013.2.2)

TABLE 3.7-2: GHG EMISSIONS UPON BUILDOUT WITHIN THE CITY LIMITS

EMISSIONS CATEGORY	*UNMITIGATED CO2E (METRIC TONS/YEAR)*	*MITIGATED CO2E (METRIC TONS/YEAR)*
Area Source GHG Emissions	1,220.6	631.4
Energy Source GHG Emissions	72,451.9	71,951.3
Mobile Source GHG Emissions	274,339.6	274,339.6
Waste Source GHG Emissions	9,109.5	9,109.5
Water Usage GHG Emissions	6,660.2	5,458.6
Total Operational GHG Emissions	**363,781.9**	**361,490.3**

SOURCES: CALEEMOD (V.2013.2.2)

TABLE 3.7-3: GHG EMISSIONS UPON BUILDOUT WITHIN THE PLANNING AREA

EMISSIONS CATEGORY	*UNMITIGATED CO2E (METRIC TONS/YEAR)*	*MITIGATED CO2E (METRIC TONS/YEAR)*
Area Source GHG Emissions	1,889.9	921.1
Energy Source GHG Emissions	98,994.5	98,259.4
Mobile Source GHG Emissions	369,984.9	369,984.9
Waste Source GHG Emissions	12,440.2	12,440.2
Water Usage GHG Emissions	8,772.6	7,189.3
Total Operational GHG Emissions	**492,082.2**	**488,794.8**

SOURCES: CALEEMOD (V.2013.2.2)

As shown in Table 3.7-1, under existing conditions, all sources within Brentwood generate a combined total of 516,695.3 metric tons of CO_2e per year. Following implementation of the GHG reduction measures contained in the proposed General Plan, and accounting for a range of statewide legislative actions to reduce GHG emissions, upon full buildout of the General Plan within the city limits, CO_2e emissions are projected to be 361,490.3 metric tons per year, which represents a decrease of approximately 30 percent. This decrease in citywide GHG emissions is consistent with the statewide GHG reduction targets established by AB 32.

As demonstrated by the policies and actions listed below, the Brentwood General Plan has taken a progressive and proactive approach to the reduction of GHG emissions through a wide range of measures and programs. The policies and actions listed below are consistent with the policy

guidance provided by CAPCOA through the 2009 *Model Policies for Greenhouse Gases in General Plans,* which is consistent with the AB 32 Scoping Plan, and GHG reduction measures recommended by the BAAQMD.

The extensive list of policies and actions provided below demonstrates Brentwood's commitment to reducing GHGs and climate change impacts through General Plan implementation to the greatest degree feasible. The City has taken a comprehensive approach to climate change through development of the General Plan.

The General Plan Land Use Map was developed to maximize the preservation of agricultural and open space lands in areas outside of the city's Sphere of Influence. The Land Use Element places an emphasis on concentrating new urban development around and within existing established urbanized areas of the city. The General Plan includes numerous policies that promote and encourage infill development, increased residential densities, and permanent preservation of open space through the use of clustered development patterns.

The Circulation Element includes policies that require and promote the development of "complete streets," which provide opportunities for multimodal transportation and reduced VMT. The Circulation Element also promotes the development and expansion of several forms of alternative transit, including bicycle transportation, rail, bus routes, and pedestrian connectivity.

The Conservation and Open Space Element includes several policies that require water and energy conservation measures in new and existing development, and promotes the use of green building practices. This element also promotes the development of a community-wide climate action plan, which will greatly assist in reducing GHG emissions in Brentwood.

All of the policies and actions identified above would encourage the development of a compact urban community, while preserving the agricultural and open space resources in the Planning Area. The City's comprehensive approach to this issue in the General Plan would result in increased local employment opportunities, increased transportation and transit options, and the incorporation of conservation and energy efficiency into new development.

In addition to the General Plan policies and actions that assist in reducing climate change impacts listed above, Brentwood has already begun the process of emissions mitigation and energy efficiency within City operations, which is also intended to result in higher energy efficiency and, therefore, savings. The City fleet owns and operates several electric and natural gas vehicles, which helps reduce the amount of greenhouse gas emitted and saves on gasoline costs. The City also sponsors a low-flow toilet rebate which aids in reducing water usage. The City has also completed construction on a new civic center, which incorporates many different energy efficient design practices in order to effectively save on energy costs.

The proposed General Plan is consistent with the policy guidance provided by CAPCOA and the BAAQMD, and would assist the State in meeting the GHG reduction goals established by AB 32. Therefore, this is a **less than significant** impact.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy COS 8-1: Improve air quality through continuing to require a development pattern that focuses growth in and around existing urbanized areas, locating new housing near places of employment, encouraging alternative modes of transportation, and requiring projects to mitigate significant air quality impacts.

Policy COS 8-2: Minimize exposure of sensitive receptors to concentrations of air pollutant emissions and toxic air contaminants.

Policy COS 8-3: Require discretionary projects involving sensitive receptors such as children, the elderly, or people with illnesses that are proposed within 500 feet of the State Route 4 corridor to include an analysis of mobile source toxic air contaminant health risks. The analysis, if necessary, shall identify feasible mitigation measures to reduce health risks to acceptable levels.

Policy COS 8-4: Encourage new development or significant remodels to install fireplaces, wood stoves, and/or heaters which meet Bay Area Air Quality Management District (BAAQMD) standards.

Policy COS 8-5: Continue to require all construction projects and ground disturbing activities to implement BAAQMD dust control and abatement measures.

Policy COS 8-6: Support the development and implementation of a GHG reduction plan, or Climate Action Plan, that addresses and reduces GHG emissions associated with community operations, including but not limited to, mobile sources (vehicle traffic), energy consumption, and solid waste.

Policy COS 8-7: Coordinate with Contra Costa County and nearby cities to implement regional GHG reduction plans and consolidate efforts to reduce GHGs throughout the county.

Policy COS 8-8: Encourage local businesses and industries to engage in voluntary efforts to reduce GHG emissions and energy consumption.

Policy COS 8-9: Preserve, protect, and enhance, as appropriate, the City's carbon sequestration resources, also referred to as "carbon sinks," to improve air quality and reduce net carbon emissions.

Policy COS 8-10: Encourage public transit, ridesharing and van pooling, shortened and combined motor vehicle trips to work and services, use of bicycles, and walking. Minimize single passenger motor vehicle use.

Policy COS 8-11: Encourage new construction to incorporate passive solar features.

Policy COS 9-1: Require all new public and privately constructed buildings to meet and comply with the most current "green" development standards in the California Code of Regulations (CCR), Title 24.

Policy COS 9-2: Support innovative and green building best management practices including, but not limited to, LEED certification for all new development, and encourage project applicants to

exceed the most current "green" development standards in the California Code of Regulations (CCR), Title 24, if feasible.

Policy COS 9-3: Promote the use of alternative energy sources in new development.

Policy COS 9-4: Incorporate innovative green building techniques and best management practices in the site design, construction, and renovation of all public projects.

Policy COS 9-5: Promote water conservation among water users.

Policy COS 9-6: Continue to require new development to incorporate water efficient fixtures into design and construction.

Policy COS 9-7: Promote the use of reclaimed water and other non-potable water sources.

Policy COS 9-8: Encourage large-scale developments and golf course developments to incorporate dual water systems.

Policy COS 9-9: Encourage and support the use of drought-tolerant and regionally native plants in landscaping.

Policy COS 9-10: Ensure that the layout and design of new development and significant remodels encourages the use of transportation modes other than automobiles and trucks.

Policy COS 9-11: Continue the citywide recycling program and actively encourage recycling.

Policy COS 9-12: Continue efforts to reduce solid waste generation throughout the life of the General Plan.

Policy COS 9-13: Continue to encourage and support the use of bicycles as an alternative means of transportation.

Policy CIR 1-3: When analyzing impacts to the circulation network created by new development or roadway improvements, consider the needs of all users, including those with disabilities, ensuring that pedestrians, bicyclists, and transit riders are considered at an equal level to automobile drivers.

Policy CIR 2-1: Establish and maintain a system of interconnected bicycle, pedestrian, and equestrian facilities that facilitate commuter and recreational travel, and that are consistent with the City's parks, trails, and recreation goals and policies in this General Plan and the Contra Costa County Countywide Bicycle and Pedestrian Plan.

Policy CIR 2-2: Routinely incorporate sidewalks and enhanced pedestrian crossing facilities as part of new street construction, and incorporate bicycle facilities on new collector and arterial streets (including bicycle lanes where appropriate, bicycle route and destination signs, and bicycle detection at signals).

Policy CIR 2-3: Require development projects to construct on-site sidewalks, paths, and trails in a manner that is consistent with the City's parks, trails, and recreation goals and policies in this General Plan and the Contra Costa County Countywide Bicycle and Pedestrian Plan, and as dictated by the location of transit stops and common pedestrian destinations.

Policy CIR 2-8: Provide secure bicycle racks in places such as the Downtown, at commercial areas, park and ride transit facilities, schools, multiple unit residential developments, and other locations where there is a concentration of residents, visitors, students, or employees.

Policy CIR 2-9: Where possible, integrate multi-use path facilities into utility corridor rights-of-way.

Policy CIR 2-10: Work with utility providers to reduce or eliminate barriers to pedestrian and bicyclist mobility created by utility infrastructure (such as utility poles that obstruct accessibility).

Policy CIR 2-12: Seek opportunities to fund and construct improvements that improve multimodal access to any future mass transit facility (i.e., eBART).

Policy CIR 2-13: Coordinate with Tri Delta Transit to increase the coverage areas and frequencies of bus service in Brentwood.

Policy CIR 2-14: Ensure that effective linkages are in place between any future mass transit facility (i.e., eBART) and the city's primary activity and employment centers.

Policy CIR 2-15: Coordinate with Tri Delta Transit to maintain existing and, where feasible, build new lighted and sheltered seating facilities at bus stops.

Policy CIR 2-17: Encourage the use of park-and-ride lots and other transit incentives for Brentwood commuters.

Policy CIR 2-18: Work with Tri Delta Transit to identify the need for and locations of additional park-and-ride lots in Brentwood in order to increase the number and length of trips made by transit and carpooling.

Policy CIR 2-19: Provide safe and continuous pedestrian, vehicular, and bicycle access at all transit park-and-ride facilities.

Policy CIR 3-2: Prioritize high-density and mixed land use patterns that promote transit and pedestrian travel along transit corridors.

Policy CIR 3-3: Design developments to include features that encourage walking, bicycling, and transit use. Design features shall include bus turnouts, transit shelters and benches, and pedestrian access points between subdivisions and between adjacent related land uses.

Policy CIR 3-9: Design intersections to provide adequate and safe access for all users including pedestrians, bicyclists, and motorists of all ages and abilities.

Policy CIR 3-10: Require new development to include effective linkages to the surrounding circulation system for all modes of travel, to the extent feasible.

Policy LU 1-4: Require new development to occur in a logical and orderly manner, focusing growth on infill locations and areas designated for urbanization on the Land Use Map (Figure LU-1), and be subject to the ability to provide urban services, including paying for any needed extension of services.

Policy LU 1-5: Encourage new development to be contiguous to existing development, whenever possible.

Policy LU 2-6: Encourage new development that is convenient to bus or future passenger rail transit lines (e.g. eBART service) in order to reduce automobile dependence.

Policy LU 2-7: Strongly encourage residential development in the city in a balanced and efficient pattern that reduces sprawl, preserves open space, and creates convenient connections to other land uses.

ACTIONS

Action COS 8c: Prepare and adopt a Climate Action Plan. The Climate Action Plan should include the following components:

1. *A baseline greenhouse gas (GHG) emissions inventory*
2. *An adopted GHG emissions reduction target of at least 15% below the business-as-usual projections by 2020*
3. *GHG reductions measures that apply to community wide operations, City operations, and future development projects*
4. *An implementation and monitoring program*

Action COS 8d: Work with Contra Costa County and the Bay Area Air Quality Management District to implement programs aimed at improving regional air quality.

Action COS 8e: Adequate buffers between new industrial uses and sensitive receptors shall be required to avoid potential air quality and nuisance impacts.

Action COS 8f: Provide a conservation page (or similar page) on the City's website that provides links to resource agencies (i.e., CARB, BAAWMD, EPA, etc.) and provides information regarding local and regional conservation and environmental programs, to the extent that the City has readily available information, including methods for pollution prevention such as reduced air pollutant and greenhouse gas emissions through use of alternative forms of transportation (i.e., bicycling, pedestrian, transit), through reducing wood-burning activities using EPA-certified wood-burning devices, etc.

Action COS 9a: Continue to review development projects to ensure that all new public and private development complies with the California Code of Regulations (CCR), Title 24 standards as well as the energy efficiency standards established by the General Plan and the Brentwood Municipal Code.

Action COS 9b: Connect residents and businesses with programs that provide free or low-cost energy efficiency audits and retrofits to existing buildings.

Action COS 9c: Explore amending the Brentwood Municipal Code to incentivize the use of small-scale renewable energy facilities and, where appropriate, to remove impediments to such uses.

Action COS 9d: Develop and provide incentives to developers and businesses that use reclaimed water and other non-potable water for landscaping.

Action COS 9e: Continue to implement Chapter 17.630 of the Brentwood Municipal Code, particularly as it relates to water conservation efforts*.*

Action COS 9f: Provide a conservation page (or similar page) on the City's website that provides links to resource agencies and provides information regarding local and regional conservation and environmental programs, to the extent that the City has readily available information, including recycling guidance for single family residences, businesses, and apartments, opportunities for reuse of materials, a description of how to compost, and a description of methods to reduce water use, such as appropriate reuse and recycling of water, water conservation measures, and xeriscaping.

Action CIR 2a: Review development applications to ensure compliance with the parks, trails, and recreation goals and policies in this General Plan and the Countywide Bicycle and Pedestrian Plan.

Action CIR 2g: Assist and coordinate with Tri Delta Transit in seeking funding to increase transit frequencies on key corridors, increase the hours of transit operation, and expand regular transit service in portions of Brentwood that have no public transit service.

Action CIR 2i: Monitor national efforts to establish effective multimodal level of service standards for pedestrian, bicycle, and transit modes.

Action CIR 2j: Issue guidelines and incorporate assessment of multimodal LOS as a routine component of transportation impact analyses once the Public Works Department determines a multimodal LOS methodology that is deemed suitable for application in Brentwood.

Action CIR 3a: During the development review process, the Community Development Department shall review plans to ensure that projects include an interconnected network of streets and paths that facilitate non-auto modes for shorter trips, and disperse rather than concentrate traffic in residential neighborhoods.

Action LU 2e: Locate medium and high density residential development near activity centers, employment centers, and major transportation corridors.

Impact 3.7-2: General Plan implementation would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases (Less than Significant)

The City implements a range of regulatory vehicles in order to reduce GHG emissions in the city from existing and future sources. All new construction is required to implement CALGreen Mandatory Tier 1 standards, which include a detailed list of green building features that address energy efficiency, water efficiency, waste reduction, material conservation, and indoor air quality. The requirements apply to newly constructed residential and non-residential facilities. Additions, alterations, repairs, and existing structures may also be subject to the requirements of CALGreen.

General Plan Action COS 8c commits Brentwood to preparing a climate action plan to further reduce GHG emissions community-wide. A climate action plan includes five steps, referred to as "Milestones." Milestone 1, creating the GHG inventory, has been completed. In February 2013,

Quantum Energy Services and Technologies completed a comprehensive community-wide GHG emissions inventory for Brentwood. The inventory utilized 2005 data for the baseline year.

Following adoption of the General Plan, the City plans to initiate preparation of a climate action plan. Upon initiation of this work effort, the City Council will complete Milestone 2, which is adoption of an emissions reduction target. Milestone 3 requires the creation of a plan to meet this adopted reduction target. Preliminary reduction measures to reduce emissions associated with energy consumption have already been completed. In August 2013, Quantum Energy Services and Technologies completed an Energy Action Plan (EAP) for Brentwood. The EAP includes a range of measures aimed at reducing energy consumption throughout the community, which would result in a corresponding reduction in GHG emissions from energy consumption. The findings and measures from the EAP will be incorporated into the full climate action plan.

Milestone 4 in the climate action plan process includes implementation of the measures identified in the climate action plan, and Milestone 5 involves ongoing monitoring and plan adjustment to ensure that results are actually achieved. The framework facilitates the integration of new and revised information, taking advantage of new opportunities and allowing adjustments to under performing initiatives.

The analysis, and resulting GHG emissions reduction plans, will incorporate many opportunities in the various contributing sectors (Building Efficiency, Fleet, Commute, Water/Sewer, Streetlights, and Photovoltaic), as identified during preparation of the climate action plan, utilizing the best available information at the time of research.

Additionally, as described under Impact 3.7-1, following implementation of the GHG reduction measures contained in the proposed General Plan, and accounting for a range of statewide legislative actions to reduce GHG emissions, upon full buildout of the General Plan within the city limits, CO_2e emissions are projected to be 361,490.3 metric tons per year, which represents a decrease of approximately 30 percent. This decrease in citywide GHG emissions is consistent with the statewide GHG reduction targets established by AB 32.

As demonstrated by the policies and actions listed above under Impact 3.7-1, the Brentwood General Plan has taken a progressive and proactive approach to the reduction of GHG emissions through a wide range of measures and programs. The policies and actions previously listed are consistent with the policy guidance provided by CAPCOA through the 2009 *Model Policies for Greenhouse Gases in General Plans,* which is consistent with the AB 32 Scoping Plan, and GHG reduction measures recommended by the BAAQMD.

The extensive list of policies and actions included in the General Plan demonstrate Brentwood's commitment to reducing GHGs and climate change impacts through General Plan implementation to the greatest degree feasible. The City has taken a comprehensive approach to climate change through development of the General Plan. As such, implementation of the proposed General Plan would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. This is a **less than significant impact.**

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Hazards include man-made or natural materials or man-made or natural conditions that may pose a threat to human health, life, property, or the environment. Hazardous materials and waste present health hazards for humans and the environment. These health hazards can result during the manufacture, transportation, use, or disposal of such materials if not handled properly. Hazards to humans can also occur from natural or human induced wildfire and air traffic accidents.

This section provides a background discussion of the hazardous materials and waste, fire hazards, and hazards from air traffic found in the city of Brentwood. This section is organized with an existing setting, regulatory setting, and impact analysis.

3.8.1 ENVIRONMENTAL SETTING

HAZARDOUS MATERIALS AND WASTE

Hazardous Materials

A hazardous material is a substance or combination of substances which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either (1) cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating irreversible illness; or (2) pose a substantial present or potential hazard to human health and safety, or the environment when improperly treated, stored, transported, or disposed of. Hazardous materials are mainly present because of industries involving chemical byproducts from manufacturing, petrochemicals, and hazardous building materials.

Hazardous Waste

Hazardous waste is the subset of hazardous materials that has been abandoned, discarded, or recycled and is not properly contained, including contaminated soil or groundwater with concentrations of chemicals, infectious agents, or toxic elements sufficiently high to increase human mortality or to destroy the ecological environment. If a hazardous material is spilled and cannot be effectively picked up and used as a product, it is considered to be hazardous waste. If a hazardous material site is unused, and it is obvious there is no realistic intent to use the material, it is also considered to be a hazardous waste. Examples of hazardous materials include flammable and combustible materials, corrosives, explosives, oxidizers, poisons, materials that react violently with water, radioactive materials, and chemicals.

Transportation of Hazardous Materials

The transportation of hazardous materials within California is subject to various Federal, State, and local regulations. It is illegal to transport explosives or inhalation hazards on any public highway not designated for that purpose, unless the use of the highway is required to permit delivery, or the loading of such materials (California Vehicle Code §§ 31602(b), 32104(a)). The California Highway Patrol (CHP) designates through routes to be used for the transportation of hazardous materials. Transportation of hazardous materials is restricted to these routes except in cases where additional travel is required from that route to deliver or receive hazardous materials to and from users.

HAZARDOUS SITES

Envirostor Data Management System

The DTSC maintains the *Envirostor Data Management System*, which provides information on hazardous waste facilities (both permitted and corrective action) as well as any available site cleanup information. This site cleanup information includes: Federal Superfund Sites (NPL), State Response Sites, Voluntary Cleanup Sites, School Cleanup Sites, Corrective Action Sites, Tiered Permit Sites, and Evaluation/Investigation Sites. The hazardous waste facilities includes: Permitted–Operating, Post-Closure Permitted, and Historical Non-Operating.

There are 18 locations with a Brentwood address that are listed in the Envirostor database. Thirteen sites are listed as school investigation sites with no action required, one site is a certified school cleanup site, one site is an inactive school cleanup site, two sites were referred to the RWQCB, and one site is a voluntary cleanup site that has land use restrictions. Table 3.8-1 lists the location of the voluntary cleanup site with land use restrictions in Brentwood. Following the table is a background discussion of this cleanup site.

TABLE 3.8-1: BRENTWOOD SITE CLEANUP AND HAZARDOUS FACILITIES LIST (ENVIROSTOR)

Name	Status Date	Location
Voluntary Cleanup – Certified O&M, Land Use Restrictions		
Former Brentwood Gun Club	9/25/2008	731 Concord Avenue

SOURCE: CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL, ENVIROSTOR DATABASE, 2013.

The former Brentwood Gun Club, located approximately 0.8 mile south of Balfour Road on the east side of Concord Avenue, began operation at the cleanup site in 1964. The facility had a trap and skeet field, rifle and pistol ranges, and an air gun range. Prior to use of the site as a gun club the property was used as a sanitary landfill. Contra Costa County acquired the property in August 1999 in preparation for the construction of the State Route 4 Bypass through the cleanup site. A Removal Action Workplan was implemented for consolidation of lead-contaminated soil under the roadway and capping contaminated outside of the freeway footprint with 1-2 feet of clean fill. Some soils that exceeded residential screening levels but were below commercial screening levels for lead were left in place without a cap. A Land Use Covenant was filed with the County Recorder that restricts future usage of the cleanup site. Annual inspections are required as part of Operations and Maintenance.

- Requires surface cover
- Day care center prohibited
- No excavation of contaminated soils without agency review and approval
- Raising of food prohibited
- No groundwater extraction at any depth without approval
- Hospital use prohibited
- Perform H&S Plan prior to subsurface work
- Land use covenant
- Notify prior to development

- Notify prior to subsurface work
- Notify prior to change in land use
- No oil or gas extraction at any depth
- Activities prohibited which disturb the remedy and monitoring systems without approval
- Residence use prohibited
- Public or private school for persons under 21 prohibited

Cortese List

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies, and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. Government Code Section 65962.5 requires the California Environmental Protection Agency to develop at least annually an updated Cortese List. California Department of Toxic Substances Control (DTSC) is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List. There are no hazardous materials release sites located in the Planning Area.

GeoTracker

GeoTracker is the California Water Resources Control Board's data management system for managing sites that impact groundwater, especially those that require groundwater cleanup (Underground Storage Tanks, Department of Defense, Site Cleanup Program) as well as permitted facilities such as operating USTs and land disposal sites.

LEAKING UNDERGROUND STORAGE TANKS (LUST)

There are 14 locations with a Brentwood address that are listed in the GeoTracker database for Leaking Underground Storage Tanks (LUST). Eight of the locations have undergone LUST cleanup and the State has closed the case. There are six locations in Brentwood with an open case. Table 3.8-2 lists the location of open and closed cases for LUSTs in Brentwood.

TABLE 3.8-2: BRENTWOOD LUST CLEANUP SITES

Name	Activity	Location
Closed Cases (Cleanup Completed)		
BEACON #3544 (FORMER)	COMPLETED - CASE CLOSED	7920 BRENTWOOD BOULEVARD
BLUE GOOSE PROPERTIES	COMPLETED - CASE CLOSED	380 HWY 4 S
BRENTWOOD SUB STATION	COMPLETED - CASE CLOSED	29 SPRUCE STREET
FRIENDLY HARBORS, LLC	COMPLETED - CASE CLOSED	7000 HOLLAND TRACT ROAD
MAGGIORE PROPERTY	COMPLETED - CASE CLOSED	1200 BALFOUR ROAD
PRIVATE RESIDENCE	COMPLETED - CASE CLOSED	PRIVATE RESIDENCE
SAVER'S SS	COMPLETED - CASE CLOSED	2323 HWY 4
TERMO COMPANY	COMPLETED - CASE CLOSED	SAN JOSE AVENUE
Open Cases		

TABLE 3.8-2: BRENTWOOD LUST CLEANUP SITES		
Name	**Activity**	**Location**
Closed Cases (Cleanup Completed)		
BRENTWOOD CARDLOCK	OPEN - REMEDIATION	8285 BRENTWOOD BOULEVARD
E-Z SERVE #100972	OPEN - REMEDIATION	741 2ND STRETT
EBMUD - BIXLER	OPEN - VERIFICATION MONITORIN	50 BIXLER ROAD
FIRST STOP GAS	OPEN - REMEDIATION	7935 BRENTWOOD BOULEVARD
LIBERTY UNION HIGH SCHOOL	OPEN - REMEDIATION	850 2ND STREET
WILLIAM HARLOW	OPEN - REMEDIATION	206 OAK STREET

SOURCE: CALIFORNIA WATER RESOURCES CONTROL BOARD GEOTRACKER DATABASE, 2013.

PERMITTED UNDERGROUND STORAGE TANK (UST)

There are 16 locations with a Brentwood address that have Underground Storage Tanks (UST) that are permitted through the California Water Resources Control Board. Table 3.8-3 lists the location of the 16 permitted underground storage tanks in Brentwood.

TABLE 3.8-3: BRENTWOOD PERMITTED UST SITES	
Name	**Location**
AMBROSINO, MIKE & LUCILLE	24010 MARSH CREEK ROAD
BEACON STATION #3544	7920 BRENTWOOD BOULEVARD
BRENTWOOD GAS MART	6700 BRENTWOOD BOULEVARD
BRENTWOOD UNION SCHOOL DIST	255 GUTHRIE LANE
CHEVRON #96911	336 OAK STREET
DWELLEY FARMS	EDEN PLAINS ROAD
FASTOP	8285 BRENTWOOD BOULEVARD
FIRST STOP AUTO MART	7935 BRENTWOOD BOULEVARD
LADD, L. JORDAN	BYRON HWY
MANGINI BROS	HWY 4
PACIFIC BELL/BRENTWOOD WF004	645 2ND STREET
QUIK STOP MARKET #149	3940 WALNUT BOULEVARD SUITE A
SAVERS FUEL MART	6750 BRENTWOOD BOULEVARD
SHANKS CHEVRON #205756	190 GRIFFITH LANE
SHIROYAMA FARM	BRENTWOOD ROAD
TOWER MART #94	8750 BRENTWOOD BOULEVARD

SOURCE: CALIFORNIA WATER RESOURCES CONTROL BOARD GEOTRACKER DATABASE, 2013.

WATER BOARD PROGRAM CLEANUP SITES

There are 18 locations with a Brentwood address that are listed in the GeoTracker database for Water Board Cleanup Sites. Eight of the locations have undergone cleanup and the State has closed the case. There are ten locations in Brentwood with an open case. Table 3.8-4 lists the location of open and closed cases for Water Board Program Cleanup Sites in Brentwood.

TABLE 3.8-4: BRENTWOOD WATER BOARD CLEANUP SITES	
Name	**Location**
Closed Cases (Cleanup Completed)	
BRENTWOOD SHOPPING CENTER	2200 SAN JOSE AVENUE
CHEVRON, CENTRAL BOULEVARD-BRENTWOOD	CENTRAL BOULEVARD
CHEVRON, MINNESOTA AVE, BRENTWOOD	CAMBRIAN PLACE
KMEP BALFOUR	3150 BALFOUR ROAD
OXY USA, INC. FORMER WILLIAMSON TANK FARM	DEER VALLEY ROAD
SCIORTINO WELL AREA	BRENTWOOD BOULEVARD
SR4 BYPASS AUTHORITY DAVIS PROPERTY	STATE RT 4 BYPASS AUTHORITY
TERMO CO	SOUTHWEST END OF SAN JOSE AVENUE
Open – Site Assessment	
CHEVRON, MARSEILLES SUBDIV., BRENTWOOD	CENTRAL BOULEVARD
CHEVRON, WALNUT BOULEVARD-BRENTWOOD	WALNUT BOULEVARD
MARSH CREEK ROAD-UPRR CROSSING	MARSH CREEK ROAD
Open – Assessment and Interim Remedial Action	
CHEVRON, MCCABE PUMP STATION	MARSH CREEK ROAD
KMEP BRENTWOOD BOOSTER	BALFOUR ROAD AND STATE ROUTE 4
KMEP ORWOOD BLOCK VALVE RELEASE	ORWOOD
Open - Inactive Case	
COWELL RANCH/ VINEYARDS AT MARSH CREEK	CONCORD AVENUE
DOW CHEMICAL CO.- MARSH CREEK DEHYDRATION STATION	MARSH CREEK
LYON WOODFIELD PROJECT	
RAVENSWOOD (DELTA LAKES)	POINT OF TIMBER ROAD

SOURCE: CALIFORNIA WATER RESOURCES CONTROL BOARD GEOTRACKER DATABASE, 2013.

WATER BOARD CEASE AND DESIST ORDERS

The California Water Resources Control Board issued a Cease and Desist Order to the City of Brentwood (CDO R5-2008-0007) January 25, 2008 as operator and discharger of the Brentwood Wastewater Treatment Plant. The Order provides time schedules for the City of Brentwood to develop, submit, and implement methods of compliance, including utilizing pollution prevention activities or construction of necessary treatment facilities to meet new effluent limitations.

The WWTP's design average dry weather flow capacity is 5 million gallons per day (mgd) consisting of a headworks (screening and grit removal), two extended aeration activated sludge basins, two denitrification basins, two secondary clarifiers, two banks of two single media filters (a total of four filters), a chlorine contact chamber, dechlorination, and a cascade aeration system. The WWTP discharges tertiary treated effluent to Marsh Creek, a water of the United States, within the Sacramento-San Joaquin Delta. Periodically, the City of Brentwood uses on-site percolation ponds for land disposal of secondary treated effluent.

Solid Waste Information System (SWIS)

FACILITY/SITE LISTING

The Solid Waste Information System (SWIS) is a database of solid waste facilities that is maintained by the California Integrated Waste Management Board (CIWMB). The SWIS data identifies active, planned and closed sites. The City of Brentwood has one active solid waste facility and one planned facility listed in the database. The active listed property is the Brentwood Solid Waste Transfer Station located at 2300 Elkins Way. The planned facility is the Brentwood Transfer Station, located at 2301 Elkins Way. The facility at 2301 Elkins Way is a new transfer station that opened on March 3, 2014, and replaces the original 15-year old transfer station, which will be demolished and converted to an overflow parking lot for Sunset Park. The new transfer station is permitted and is now active and operational, however, the CIWMB (CalRecycle) website database had not been updated to reflect the active status of the new transfer station at the time of preparation of this EIR.

The new transfer station facility is owned by the City of Brentwood, is administered by the Public Works Department, and will be inspected numerous times each year. The most recent inspections of the original facility (as of 2/2014) by the Local Enforcement Agency (Contra Costa County Health Services Department Environmental Health Division) show no violations or areas of concern. The site details are listed in Table 3.8-5 below.

TABLE 3.8-5: CIWMB CLOSED FACILITIES/SITES

Number	Name	Activity	Regulatory	Status
07-AA-0053	Brentwood Solid Waste Transfer Station	Solid Waste Transfer Site	Permitted	Active
07-AA-0068	Brentwood Transfer Station	Solid Waste Transfer Site	Permitted	Planned

SOURCE: CALIFORNIA DEPARTMENT OF RESOURCES RECYCLING AND RECOVERY, 2014.

WILDFIRE HAZARDS

Wildfires are a potential hazard to development and land uses located in the foothill and mountain areas of the county. The severity of wildfire problems depends on a combination of vegetation, climate, slope, and people. The grassland, chaparral, woodland, and forest vegetation found in areas of Contra Costa county, coupled with hot, dry summers, present extreme fire hazards during critical fire periods for much of the county. In addition to natural factors such as lightning, human activity is a primary factor contributing to the incidence of wildfires. Campfires, smoking, debris burning, arson, and equipment use are common human-related causes of wildfires.

Identifying Fire Hazards

Fuel Rank

Fuel rank is a ranking system developed by CalFire that incorporates four wildfire factors: fuel model, slope, ladder index, and crown index.

The U.S. Forest Service has developed a series of fuel models, which categorize fuels based on burn characteristics. These fuel models help predict fire behavior. In addition to fuel characteristics, slope is an important contributor to fire hazard levels. A surface ranking system has been developed by CalFire, which incorporates the applicable fuel models and slope data. The model categorizes slope into six ranges: 0-10%, 11-25%, 26-40%, 41-55%, 56-75% and >75%. The combined fuel model and slope data are organized into three categories, referred to as surface rank. Thus, surface rank is a reflection of the quantity and burn characteristics of the fuels and the topography in a given area.

The ladder index is a reflection of the distance from the ground to the lowest leafy vegetation for tree and plant species. The crown index is a reflection of the quantity of leafy vegetation present within individual specimens of a given species.

The surface rank, ladder index, and crown index for a given area are combined in order to establish a fuel rank of medium, high, or very high. Fuel rank is used by CalFire to identify areas in the California Fire Plan where large, catastrophic fires are most likely.

The city of Brentwood is primarily devoid of CalFire fuel ranks. The exceptions are areas within the undeveloped Sphere of Influence in the southwestern portion of the Planning Area. These areas contain vegetation that possess characteristics warranting “moderate” fuel ranks. These areas possess combustible material in sufficient quantities combined with topographic characteristics that pose a wildfire risk. In contract, the majority of land in the city limits lacks the topographic characteristics that could significantly affect fire behavior. CalFire data for the foothill and mountain areas to the west of the Planning Area include a preponderance of “moderate” and “high” fuel ranks.

Fire Threat

The fuel rank data are used by CalFire to delineate fire threat based on a system of ordinal ranking. Thus, the Fire Threat model creates discrete regions, which reflect fire probability and predicted fire behavior. The four classes of fire threat range from moderate to extreme.

Fire Hazard Severity Zones

The state has charged CalFire with the identification of Fire Hazard Severity Zones (FHSZ) within State Responsibility Areas. In addition, CalFire must recommend Very High Fire Hazard Severity Zones (VHFHSZ) identified within any Local Responsibility Areas. The FHSZ maps are used by the State Fire Marshall as a basis for the adoption of applicable building code standards.

Local Responsibility Areas

Local Responsibility Areas (LRA) are concentrated in the incorporated areas of Contra Costa county. Brentwood is an LRA that is served by the East Contra Costa Fire Protection District (ECCFPD). The ECCFPD provides fire protection services to Brentwood, Discovery Bay, Oakley, and Knightsen. The city of Brentwood is not categorized as a "Very High" FHSZ by CalFire.

State Responsibility Areas

State Responsibility Areas within the Planning Area are found to the southwest in the hilly terrain of the Diablo Foothills. Specifically, this includes the areas that are outside the city limits, but within the Sphere of Influence. The hilly terrain in the southwest portion of the Planning Area is categorized as a "Moderate" FHSZ. This "Moderate" FHSZ extends to the west where it transitions to “High” FHSZ in the steeper areas of the Diablo Foothills. The closest "Very High" FHSZ is located around Mount Diablo to the west.

Federal Responsibility Areas

There are no Federal Responsibility Areas within the vicinity of the Planning Area.

HAZARDS FROM AIR TRAFFIC

The State Division of Aeronautics has compiled extensive data regarding aircraft accidents around airports in California. This data is much more detailed and specific than data currently available from the FAA and the National Transportation Safety Board (NTSB). According to the California Airport Land Use Planning Handbook (2002), prepared by the State Division of Aeronautics, 18.2% of general aviation accidents occur during takeoff and initial climb and 44.2% of general aviation accidents occur during approach and landing. The State Division of Aeronautics has plotted accidents during these phases at airports across the country and has determined certain theoretical areas of high accident probability.

Approach and Landing Accidents

As nearly half of all general aviation accidents occur in the approach and landing phases of flight, considerable work has been done to determine the approximate probability of such accidents. Nearly 77% of accidents during this phase of flight occur during touchdown onto the runway or during the roll-out. These accidents typically consist of hard or long landings, ground loops (where the aircraft spins out on the ground), departures from the runway surface, etc. These types of accidents are rarely fatal and often do not involve other aircraft or structures. Commonly these accidents occur due to loss of control on the part of the pilot and, to some extent, weather conditions (California Division of Aeronautics, 2002).

The remaining 23% of accidents during the approach and landing phase of flight occur as the aircraft is maneuvered towards the runway for landing, in a portion of the airspace around the airport commonly called the traffic pattern. Common causes of approach accidents include the pilot’s misjudging of the rate of descent, poor visibility, unexpected downdrafts, or tall objects beneath the final approach course. Improper use of rudder on an aircraft during the last turn toward the runway can sometimes result in a stall (a cross-control stall) and resultant spin, causing the aircraft to strike the ground directly below the aircraft. The types of events that lead to approach accidents tend to place the accident site fairly close to the extended runway centerline. The probability of accidents increases as the flight path nears the approach end of the runway (California Division of Aeronautics, 2002).

According to aircraft accident plotting provided by the State Division of Aeronautics, most accidents that occur during the approach and landing phase of flight occur on the airport surface itself. The remainder of accidents that occur during this phase of flight are generally clustered along the extended centerline of the runway, where the aircraft is flying closest to the ground and with the lowest airspeed (California Division of Aeronautics, 2002).

Takeoff and Departure Accidents

According to data collected by the State Division of Aeronautics, nearly 65% of all accidents during the takeoff and departure phase of flight occur during the initial climb phase, immediately after takeoff. This data is correlated by two physical constraints of general aviation aircraft:

- The takeoff and initial climb phase are times when the aircraft engine(s) is under maximum stress and is thus more susceptible to mechanical problems than at other phases of flight; and
- Average general aviation runways are not typically long enough to allow an aircraft that experiences a loss of power shortly after takeoff to land again and stop before the end of the runway.

While the majority of approach and landing accidents occur on or near to the centerline of the runway, accidents that occur during initial climb are more dispersed in their location as pilots are not attempting to get to any one specific point (such as a runway). Additionally, aircraft vary widely in payload, engine power, glide ratio, and several other factors that affect glide distance, handling characteristics after engine loss, and general response to engine failure. This further disperses the accident pattern. However, while the pattern is more dispersed than that seen for approach and landing accidents, the departure pattern is still generally localized in the direction of departure and within proximity of the centerline. This is partially due to the fact that pilots are trained to fly straight ahead and avoid turns when experiencing a loss of power or engine failure. Turning flight causes the aircraft to sink faster and flying straight allows for more time to attempt to fix the problem (California Division of Aeronautics, 2002).

Local Airport Facilities

There are no private or public airport facilities in the Planning Area.

Byron Airport: The Byron Airport is located approximately eight miles southeast of the Planning Area. This airport is a County-owned facility that occupies approximately 1,307 acres at an airport reference elevation of 76 feet above Mean Sea Level (MSL). The Airport has two nonintersecting runways each with a parallel taxiway and several connector taxiways. General aviation facilities are generally concentrated in a "V" formed by the two runways with approximately 10 acres of aircraft storage area, four acres of apron, 125,000 square feet of hangars, and 2,400 square feet of office space. The majority of these facilities were constructed when the airport was built in 1994. Approximately 814 acres of airport property to the south and west of the airfield are set aside as a wildlife preserve. None of the Planning Area lies within the land use compatibility zones for this airport (Contra Costa County Airport Land Use Commission, 2000).

Major Regional Airport Facilities

San Francisco International Airport (SFO): SFO is the largest airport in the region, and a hub for United Airlines. It provides a wide range of domestic airline service and all of the region's long-haul international flights. San Francisco serves 68% of regional Bay Area air passengers and 43% of regional air cargo shipments.

Metropolitan Oakland International Airport (OAK): Oakland Airport has traditionally been the hub for low cost carriers and a major air cargo center due to operations by FedEx and UPS. Oakland serves 17% of Bay Area regional air passengers and 52% of air cargo.

Norman Y. Mineta San Jose International Airport (SJC): Traffic at San Jose Airport has been affected by the recent realignment of airline services in the Bay Area. The airport does not currently offer any long-haul international flights, and air cargo facilities are limited due to space constraints. San Jose serves 15% of the Bay Area regional air passengers and 6% of air cargo.

Sacramento International Airport (SMF): The Sacramento Airport served nearly 9 million passengers in 2012 with 150 daily departures to 36 destinations. Southwest provides the majority of flights. Many Sacramento area air passengers use Oakland and San Francisco for their air service needs. Conversely, some Bay Area passengers choose Sacramento Airport.

National Transportation Safety Board Aviation Accident Database

The National Transportation Safety Board Aviation Accident Database identifies a total of nine aircraft accidents with Brentwood identified as the nearest location from 1983 to 2013 (National Transportation Safety Board, 2011). The accidents involved a variety of aircraft, including airplanes and helicopters. None of the accidents occurred in the Planning Area, and most were associated with private airstrips east of the Planning Area. Two of the accidents resulted in fatalities.

3.8.2 REGULATORY SETTING

FEDERAL REGULATIONS

Aviation Act of 1958

The Federal Aviation Act resulted in the creation of the Federal Aviation Administration (FAA). The FAA was charged with the creation and maintenance of a National Airspace System.

Clean Air Act

According to the Clean Air Act, the EPA has established National Emissions Standards for Hazardous Air Pollutants. Exceeding the emissions standard for a given air pollutant may cause an increase in illnesses and/or fatalities.

Clean Water Act

The CWA, which amended the WPCA of 1972, sets forth the §404 program to regulate the discharge of dredged and fill material into Waters of the U.S. and the §402 National Pollutant

Discharge Elimination System (NPDES) to regulate the discharge of pollutants into Waters of the U.S. The §401 Water Quality Certification program establishes a framework of water quality protection for activities requiring a variety of Federal permits and approvals (including CWA §404, CWA §402, FERC Hydropower and §10 Rivers and Harbors).

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) introduced active Federal involvement to emergency response, site remediation, and spill prevention, most notably the Superfund program. The Act was intended to be comprehensive in encompassing both the prevention of, and response to, uncontrolled hazardous material releases. CERCLA deals with environmental response, providing mechanisms for reacting to emergencies and to chronic hazardous material releases. In addition to establishing procedures to prevent and remedy problems, it establishes a system for compensating appropriate individuals and assigning appropriate liability. It is designed to plan for and respond to failure in other regulatory programs and to remedy problems resulting from action taken before the era of comprehensive regulatory protection.

Environmental Protection Agency

The primary regulator of hazards and hazardous materials is the EPA, whose mission is to protect human health and the environment. The city of Brentwood is located within EPA Region 9, which includes Arizona, California, Hawaii, and New Mexico.

Federal Aviation Regulations (CFR, Title 14)

The Federal Aviation Regulations (FAR) establish regulations related to aircraft, aeronautics, and inspections and permitting.

FY 2001 Appropriations Act

Title IV of the Appropriations Act required the identification of "Urban Wildland Interface Communities in the Vicinity of Federal Lands that are at High Risk from Wildfire" by the U.S. Departments of the Interior and Agriculture.

Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act, as amended, is the basic statute regulating hazardous materials transportation in the United States. The purpose of the law is to provide adequate protection against the risks to life and property inherent in transporting hazardous materials in interstate commerce. This law gives the U.S. Department of Transportation (USDOT) and other agencies the authority to issue and enforce rules and regulations governing the safe transportation of hazardous materials (DOE 2002).

Natural Gas Pipeline Safety Act

The Natural Gas Pipeline Safety Act authorizes the U.S. Department of Transportation Office of Pipeline Safety to regulate pipeline transportation of natural (flammable, toxic, or corrosive) gas

and other gases as well as the transportation and storage of liquefied natural gas. The Office of Pipeline Safety regulates the design, construction, inspection, testing, operation, and maintenance of pipeline facilities. While the Federal government is primarily responsible for developing, issuing, and enforcing pipeline safety regulations, the pipeline safety statutes provide for State assumption of the intrastate regulatory, inspection, and enforcement responsibilities under an annual certification. To qualify for certification, a state must adopt the minimum Federal regulations and may adopt additional or more stringent regulations as long as they are not incompatible.

Resource Conservation and Recovery Act (RCRA)

This act established EPA's "cradle to grave" control (generation, transportation, treatment, storage and disposal) over hazardous materials and wastes. In California, the Department of Toxic Substances Control (DTSC) has RCRA authorization.

STATE REGULATIONS

Aeronautics Act (Public Utilities Code §21001)

The Caltrans Division of Aeronautics bases the majority of its aviation policies on the Aeronautics Act. Policies include permits and annual inspections for public airports and hospital heliports and recommendations for schools proposed within two miles of airport runways.

Airport Land Use Commission Law (Public Utilities Code §21670 et seq.)

The law, passed in 1967, authorized the creation of Airport Land Use Commissions (ALUC) in California. Per the Public Utilities Code, the purpose of an ALUC is to protect *public health, safety, and welfare by encouraging orderly expansion of airports and the adoption of land use measures that minimizes exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses* (§21670). Furthermore, each ALUC must prepare an Airport Land Use Compatibility Plan (ALUCP). Each ALUCP, which must be based on a twenty-year planning horizon, should focus on broadly defined noise and safety impacts.

Assembly Bill 337

Per AB 337, local fire prevention authorities and the California Department of Forestry and Fire Protection (CalFire) are required to identify Very High Fire Hazard Severity Zones (VHFHSZ) in Local Responsibility Areas (LRA). Standards related to brush clearance and the use of fire resistant materials in fire hazard severity zones are also established.

California Code of Regulations

Title 3 of the CCR pertains to the application of pesticides and related chemicals. Parties applying regulated substances must continuously evaluate application equipment, the weather, the treated lands and all surrounding properties. Title 3 prohibits any application that would:

- Contaminate persons not involved in the application;
- Damage non-target crops or animals or any other public or private property; and

- Contaminate public or private property or create health hazards on said property.

Title 8 of the CCR establishes California Occupational Safety and Health Administration (Cal OSHA) requirements related to public and worker protection. Topics addressed in Title 8 include materials exposure limits, equipment requirements, protective clothing, hazardous materials, and accident prevention. Construction safety and exposure standards for lead and asbestos are set forth in Title 8.

Title 14 of the CCR establishes minimum standards for solid waste handling and disposal.

Title 17 of the CCR establishes regulations relating to the use and disturbance of materials containing naturally occurring asbestos.

Title 19 of the CCR establishes a variety of emergency fire response, fire prevention, and construction and construction materials standards.

Title 22 of the CCR sets forth definitions of hazardous waste and special waste. The section also identifies hazardous waste criteria and establishes regulations pertaining to the storage, transport, and disposal of hazardous waste.

Title 26 of the CCR is a medley of State regulations pertaining to hazardous materials and waste that are presented in other regulatory sections. Title 26 mandates specific management criteria related to hazardous materials identification, packaging, and disposal. In addition, Title 26 establishes requirements for hazardous materials transport, containment, treatment, and disposal. Finally, staff training standards are set forth in Title 26.

Title 27 of the CCR sets forth a variety of regulations relating to the construction, operation, and maintenance of the state's landfills. The title establishes a landfill classification system and categories of waste. Each class of landfill is constructed to contain specific types of waste (household, inert, special, and hazardous).

California Fire Code

The California Fire Code (CFC) is Part 9 of Title 24, California Code of Regulations, also referred to as the California Building Standards Code. The CFC incorporates the 2009 International Fire Code of the International Code Council with necessary California amendments. The purpose of the CFC is to establish the minimum requirements consistent with nationally recognized good practices to safeguard the public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises, and to provide safety and assistance to fire fighters and emergency responders during emergency operations.

California Government Code Section 65302

This section, which establishes standards for developing and updating General Plans, includes fire hazard assessment and Safety Element content requirements.

California Health and Safety Code

Division 11 of the Health and Safety Code establishes regulations related to a variety of explosive substances and devices, including high explosives and fireworks. Section 12000 et seq. establishes regulations related to explosives and explosive devices, including permitting, handling, storage, and transport (in quantities greater than 1,000 pounds).

Division 12 establishes requirements for buildings used by the public, including essential services buildings, earthquake hazard mitigation technologies, school buildings, and postsecondary buildings.

Division 20 establishes Department of Toxic Substances Control (DTSC) authority and sets forth hazardous waste and underground storage tank regulations. In addition, the division creates a State superfund framework that mirrors the Federal program.

Division 26 establishes California Air Resources Board (CARB) authority. The division designates CARB as the air pollution control agency per Federal regulations and charges the Board with meeting Clean Air Act requirements.

California Health and Safety Code and UBC Section 13000 et seq.

State fire regulations are set forth in §13000 *et seq*. of the California Health and Safety Code, which is divided into "Fires and Fire Protection" and "Buildings Used by the Public." The regulations provide for the enforcement of the UBC and mandate the abatement of fire hazards.

The code establishes broadly applicable regulations, such as standards for buildings and fire protection devices, in addition to regulations for specific land uses, such as childcare facilities and high-rise structures.

California Vehicle Code §31600 (Transportation of Explosives)

Establishes requirements related to the transportation of explosives in quantities greater than 1,000 pounds, including licensing and route identification.

California Public Resources Code

The State's Fire Safe Regulations are set forth in Public Resources Code §4290, which include the establishment of State Responsibility Areas (SRA).

Public Resources Code §4291 sets forth defensible space requirements, which are applicable to anyone that "*…owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material"* (§4291(a)).

Food and Agriculture Code

Division 6 of the California Food and Agriculture Code (FAC) establishes pesticide application regulations. The division establishes training standards for pilots conducting aerial applications as well as permitting and certification requirements.

State Oversight of Hazards and Hazardous Materials

The Department of Toxic Substances Control (DTSC) is chiefly responsible for regulation, handling, use, and disposal of toxic materials while the State Water Resources Control Board (SWRCB) regulates discharge of potentially hazardous materials to waterways and aquifers and administers the basin plans for groundwater resources in the various regions of the state. The Regional Water Quality Control Board (RWQCB) oversees surface and groundwater in Contra Costa county. Programs intended to protect workers from exposure to hazardous materials and from accidental upset are covered under the Occupational Safety & Health Administration at both the Federal level (OSHA) and at the State level through the California Division of Occupational Safety and Health (Cal/OSHA), as well as through the California Department of Health Services (DHS). Air quality is regulated through the California Air Resources Board and Bay Area Air Quality Management District. The State Fire Marshal is responsible for the protection of life and property through the development and application of fire prevention engineering, education, and enforcement; the California Department of Forestry and Fire Protection (CalFIRE) provides fire protection services for State and privately-owned wildlands.

Uniform Fire Code

The Uniform Fire Code (UFC) establishes standards related to the design, construction, and maintenance of buildings. The standards set forth in the UFC range from designing for access by firefighters and equipment and minimum requirements for automatic sprinklers and fire hydrants, to the appropriate storage and use of combustible materials.

Water Code

Division 7 of the California Water Code, commonly referred to as the Porter-Cologne Water Quality Control Act, created the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB). In addition, water quality responsibilities are established for the SWRCB and RWQCBs.

LOCAL REGULATIONS

Certified Unified Program Agency (CUPA)

The California Environmental Protection Agency designates specific local agencies as Certified Unified Program Agencies (CUPA), typically at the county level. In Contra Costa county, the Contra Costa County Health Services Department Hazardous Materials Division is responsible for the County's Certified Unified Program Agency (CUPA) programs. Each designated CUPA is responsible for the implementation of six statewide programs within its jurisdiction. These programs include:

- Underground storage of hazardous substances (USTs)
- Hazardous Materials Business Plan (HMP) requirements
- Hazardous Waste Generator requirements
- California Accidental Release Prevention (Cal-ARP) program
- Uniform Fire Code hazardous materials management plan
- Above Ground Storage Tanks (Spill Prevention Control and Countermeasures Plan only)

Implementation of these programs involves:

- Permitting and inspection of regulated facilities
- Providing educational guidance and notice of changing requirements stipulated in State or Federal laws and regulations
- Investigations of complaints regarding spills or unauthorized releases
- Administrative enforcement actions levied against facilities that have violated applicable laws and regulations

3.8.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact from hazards and hazardous materials if it will:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

- 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;

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

- 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;

- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;

- 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;

- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

- 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.

IMPACTS AND MITIGATION MEASURES

Impact 3.8-1: General Plan implementation has the potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment (Less than Significant)

Future development, infrastructure, and other projects allowed under the General Plan may involve the transportation, use, and/or disposal of hazardous materials. Hazardous materials are typically used in industrial, agricultural, and commercial uses, as well as residential uses. Future uses may involve the transport and disposal of such materials from time to time. Future activities may involve equipment or construction activities that use hazardous materials (e.g., coatings, solvents and fuels, and diesel-fueled equipment), cleanup of sites with known hazardous materials, the transportation of excavated soil and/or groundwater containing contaminants from areas that are identified as being contaminated, or disposal of contaminated materials at an approved disposal site. While hazardous materials may be associated with industrial and agricultural activities, hazardous materials may also be associated with the regular cleaning and maintenance of residential and other less intense uses. Accidental release of hazardous materials that are used in the construction or operation of a project may occur. There is also the potential for accidental release of pre-existing hazardous materials, either associated with previous activities on a site or naturally occurring hazards such as asbestos.

The use, transportation, and disposal of hazardous materials is regulated and monitored by local fire departments, Certified Unified Program Agencies (CUPAs), the State Division of Occupational Safety and Health, and the Department of Toxic Substances Control consistent with the requirements of Federal, State, and local regulations and policies. Facilities that store hazardous materials on-site are required to maintain a Hazardous Materials Business Plan in accordance with State regulations. In the event of an accidental release of hazardous materials, the local CUPA and emergency management agencies (e.g., Police Department and Fire District) would respond. All future projects allowed under the General Plan would be required to comply with the provisions of Federal, State, and local requirements related to hazardous materials. As future development and infrastructure projects are considered by the City, each project would be evaluated for potential impacts, specific to the project, associated with hazardous materials as required under CEQA.

In addition to the requirements associated with Federal and State regulations and the Municipal Code, the General Plan includes policies and actions to address potential impacts associated with hazardous materials among other issues. These policies and actions in the General Plan would ensure that potential hazards are identified on a project site, that development is located in areas where potential exposure to hazards and hazardous materials can be mitigated to an acceptable level, and that business operations comply with Federal and State regulations regarding the use, transport, storage, and disposal of hazardous materials. The General Plan also includes policies and actions to ensure that the City has adequate emergency response plans and measures to respond in the event of an accidental release of a hazardous substance. Compliance with applicable

General Plan policies and actions, as well as Federal and State regulations, would ensure that potential impacts associated with the routine use, transport, storage, or disposal or accidental release of hazardous materials would be **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy SA 4-1: Encourage producers and users of hazardous materials to reduce the amounts of hazardous materials generated.

Policy SA 4-2: Require hazardous waste generated within the city limits of Brentwood to be disposed of in a safe manner, consistent with all applicable local, State, and Federal laws.

Policy SA 4-3: Hazardous materials shall be stored in a safe manner, consistent with all applicable local, State, and Federal laws.

Policy SA 4-4: Coordinate with the East Contra Costa Fire Protection District to ensure that businesses in Brentwood which handle hazardous materials prepare and file a Hazardous Materials Business Plan (HMBP). The HMBP shall consist of general business information, basic information on the location, type, quantity, and health risks of hazardous materials, and emergency response and training plans.

Policy SA 4-5: Require compliance with Contra Costa County's Countywide Integrated Waste Management Plan as well as all of the Consolidated Unified Protection Agency (CUPA) program elements.

Policy IF 5-1: Provide adequate waste disposal, recycling, and reuse services, including programs that improve public access to solid waste collection and recycling facilities.

Policy IF 5-2: Reduce the amount of waste requiring disposal at landfills and increase recycling and reuse among residents, businesses, and City departments, as set forth in the City's Source Reduction and Recycling Element.

Policy IF 5-3: When feasible, minimize the potential impacts of waste collection, transportation, and the location of potential disposal facilities upon the residents of Brentwood.

Policy IF 5-4: Locate waste collection, transfer, and processing facilities in areas that minimize impacts to the surrounding community.

Policy IF 5-5: Coordinate with Contra Costa County on any future plans to establish new landfill sites within the county in order to minimize potential adverse impacts to the Brentwood community.

Policy IF 5-6: Participate with Contra Costa County to implement a hazardous materials collection and disposal program.

ACTIONS

Action SA 4a: *Provide educational opportunities for generators of small quantity, household, and agricultural waste products regarding their responsibilities for source reduction and proper and safe hazardous waste management and disposal.*

Action SA 4b: *Provide a convenient program for the local disposal of household hazardous wastes at Brentwood's Solid Waste Transfer Station on a routine basis. The availability of the program should be widely publicized throughout the community.*

Action SA 4c: *Work cooperatively with the East Contra Costa Fire Protection District to train local police and fire personnel in the specialized handling and cleanup procedures that are required for radioactive, toxic, and hazardous substance spills.*

Action SA 4d: *Prepare and maintain an inventory of environmentally contaminated sites to educate future property owners about contamination from previous uses. The City shall work directly with property owners in the cleanup of these sites, particularly in areas with redevelopment potential.*

Action IF 5a: *Periodically review and update the City's Source Reduction and Recycling Element.*

Impact 3.8-2: General Plan implementation has the potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school (Less than Significant)

The city of Brentwood is served by the Brentwood Union School District (K-5 elementary schools and 6-8 middle schools) and the Liberty Union High School District (9-12 high schools). Table 3.8-6 provides a summary of the public schools serving the city's population, including the address of each school.

TABLE 3.8-6 PUBLIC SCHOOLS SERVING BRENTWOOD			
School	**Grades Served**	**Address**	**Enrollment (2011-2012 School Year)**
Elementary Schools			
Brentwood Elementary	K-5	200 Griffith Lane	707
Garin Elementary	K-5	250 First Street	806
Loma Vista Elementary	K-5	2110 San Jose Avenue	641
Marsh Creek Elementary	K-5	601 Grant Street	696
Mary Casey Black Elementary	K-5	480 Farmington Drive	Open for the 2013-2014 school year. Data not yet available
Pioneer Elementary	K-5	2010 Shady Willow Lane	917
Ron Nunn Elementary	K-5	1755 Central Boulevard	631
R. Paul Krey Elementary	K-5	190 Crawford Drive	924
Middle Schools			
J. Douglas Adams Middle School	6-8	401 American Avenue	1,030
Edna Hill Middle School	6-8	140 Birch Street	894
William B. Bristow Middle School	6-8	855 Minnesota Avenue	1,084
High Schools			
Freedom High School	9-12	1050 Neroly Road, Oakley, CA	2,536
Heritage High School	9-12	101 American Avenue	2,200
La Paloma High School (Continuation School)	9-12	400 Ghiggeri Drive	229
Liberty High School	9-12	850 Second Street	2,131

SOURCES: CITY OF BRENTWOOD HTTP://WWW.CI.BRENTWOOD.CA.US/LINKS/SCHOOL.CFM (ACCESSED FEBRUARY 2013) AND CALIFORNIA DEPARTMENT OF EDUCATION, EDUCATIONAL DEMOGRAPHICS UNIT, CALIFORNIA PUBLIC SCHOOL ENROLLMENT-SCHOOL REPORT (2011-2012)

The General Plan Land Use Element includes land use designations, but does not propose actual businesses. As such, it is not possible to determine if a specific use will result in hazardous emissions or require handling of hazardous or acutely hazardous materials, substances, or waste. The land use designations with the highest possibility of having businesses that result in hazardous emissions or require handling of hazardous or acutely hazardous materials, substances, or waste would be commercial, industrial, or agricultural. The General Plan Land Use Element does not include any commercial, industrial, or agricultural uses immediately adjacent to an existing or proposed school. Additionally, there are no known existing commercial, industrial, or agricultural businesses that are known to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of a school.

Nevertheless, all hazardous materials would be handled in accordance with Federal, State, and County requirements, which would limit the potential for a project to expose nearby uses, including schools, to hazardous emissions or an accidental release. Hazardous emissions are

monitored by the Bay Area Air Quality Management District, Regional Water Quality Control Board, and Department of Toxic Substances Control, and the local CUPA. In the event of a hazardous materials spill or release, notification and cleanup operations would be performed in compliance with applicable Federal, State, and local regulations and policies, including hazard mitigation plans. Compliance with all existing regulations and hazard mitigation plans as well as General Plan policies and actions would ensure that the impact is **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy LU 4-5: To the extent feasible, encourage school districts to locate school sites within easy walking distance of a large percentage of the student population and in areas where there are existing or planned safe routes to school (complete sidewalk/bike lane access from the residential neighborhoods within the enrollment boundary).

Policy COS 2-7: Require the use of buffers such as greenbelts, drainage features, parks, or other improved and maintained features in order to separate residential and other sensitive land uses, such as schools and hospitals, from agricultural lands and agricultural operations.

Policy COS 2-10: Limit incompatible uses (i.e., schools, hospitals, and high density residential) near agriculture.

ACTIONS

Action COS 2c: Amend Title 17 (Zoning) of the Brentwood Municipal Code to include specific agricultural buffer requirements for residential and sensitive land uses (i.e., schools, day care facilities, and medical facilities) that are proposed near existing agricultural lands in order to protect the associated agricultural operations from encroachment by incompatible uses. Buffers shall generally be defined as a physical separation, depending on the land use, and may consist of topographic features, roadways, bike/pedestrian paths, greenbelts, water courses, or similar features. The buffer shall occur on the parcel for which a permit is sought and shall favor protection of the maximum amount of agricultural land.

Impact 3.8-3: General Plan implementation has the potential to have projects located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (Less than Significant)

There are no hazardous materials release sites compiled pursuant to Government Code Section 65962.5 located in the Planning Area.

There are 18 locations with a Brentwood address that are listed in the Envirostor database. Thirteen of these sites are listed as school investigation sites with no action required, one site is a certified school cleanup site, one site is an inactive school cleanup site, two sites were referred to the RWQCB, and one site is a voluntary cleanup site that has land use restrictions. The voluntary cleanup site is the former Brentwood Gun Club, located approximately 0.8 mile south of Balfour Road on the east side of Concord Avenue. Contra Costa County acquired the property in August

1999 in preparation for the construction of the State Route 4 Bypass through the cleanup site. A Removal Action Workplan was implemented for consolidation of lead-contaminated soil under the roadway and capping contaminated outside of the freeway footprint with 1-2 feet of clean fill. Some soils that exceeded residential screening levels but were below commercial screening levels for lead were left in place without a cap. A Land Use Covenant was filed with the County Recorder that restricts future usage of the cleanup site. Annual inspections are required as part of Operations and Maintenance.

There are 14 locations with a Brentwood address that are listed in the GeoTracker database for Leaking Underground Storage Tanks (LUST). Eight of the locations have undergone LUST cleanup and the State has closed the case. There are six locations in Brentwood with an open case.

There are 16 locations with a Brentwood address that have Underground Storage Tanks (UST) that are permitted through the California Water Resources Control Board.

There are 18 locations with a Brentwood address that are listed in the GeoTracker database for Water Board Cleanup Sites. Eight of the locations have undergone cleanup and the State has closed the case. There are ten locations in Brentwood with an open case.

The California Water Resources Control Board issued a Cease and Desist Order to the City of Brentwood (CDO R5-2008-0007) January 25, 2008 as operator and discharger of the Brentwood Wastewater Treatment Plant. The Order provides time schedules for the City of Brentwood to develop, submit, and implement methods of compliance, including utilizing pollution prevention activities or construction of necessary treatment facilities to meet new effluent limitations.

The City of Brentwood has one active solid waste facility and one planned facility listed in the CIWMB database. The active listed property is the Brentwood Solid Waste Transfer Station located at 2300 Elkins Way. The planned facility is the Brentwood Transfer Station, located at 2301 Elkins Way. The facility at 2301 Elkins Way is a new transfer station that opened on March 3, 2014, and replaces the original 15-year old transfer station, which will be demolished and converted to an overflow parking lot for Sunset Park. The new transfer station is permitted and is now active and operational, however, the CIWMB (CalRecycle) website database had not been updated to reflect the active status of the new transfer station at the time of preparation of this EIR.

The new transfer station facility is owned by the City of Brentwood, is administered by the Public Works Department, and will be inspected numerous times each year. The most recent inspections of the original facility (as of 2/2014) by the Local Enforcement Agency (Contra Costa County Health Services Department Environmental Health Division) show no violations or areas of concern.

The above mentioned sites are subject to various Federal and State laws and regulatory agencies, including the CERCLA, EPA, DTSC, and RWQCB. Development allowed by the General Plan could create a hazard to the public or the environment through a disturbance or release of contaminated materials if the development occurs on or adjacent to contaminated sites without appropriate measures to contain or mitigate the existing contamination. Federal and State regulations ensure that existing hazards, including those associated with known hazardous materials sites, are addressed prior to development. The General Plan includes policies and actions that are intended

to prevent inappropriate disposal of household hazardous materials through an education program and a requirement to have interior and exterior storage areas for recyclables and green waste. Compliance with Federal and State regulations would ensure that potential impacts associated with the hazardous conditions on sites listed pursuant to Government Code Section 65962.5 would be **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy SA 4-1: Encourage producers and users of hazardous materials to reduce the amounts of hazardous materials generated.

Policy SA 4-2: Require hazardous waste generated within the city limits of Brentwood to be disposed of in a safe manner, consistent with all applicable local, State, and Federal laws.

Policy SA 4-3: Hazardous materials shall be stored in a safe manner, consistent with all applicable local, State, and Federal laws.

Policy SA 4-4: Coordinate with the East Contra Costa Fire Protection District to ensure that businesses in Brentwood which handle hazardous materials prepare and file a Hazardous Materials Business Plan (HMBP). The HMBP shall consist of general business information, basic information on the location, type, quantity, and health risks of hazardous materials, and emergency response and training plans.

Policy SA 4-5: Require compliance with Contra Costa County's Countywide Integrated Waste Management Plan as well as all of the Consolidated Unified Protection Agency (CUPA) program elements.

Policy IF 5-1: Provide adequate waste disposal, recycling, and reuse services, including programs that improve public access to solid waste collection and recycling facilities.

Policy IF 5-2: Reduce the amount of waste requiring disposal at landfills and increase recycling and reuse among residents, businesses, and City departments, as set forth in the City's Source Reduction and Recycling Element.

Policy IF 5-3: When feasible, minimize the potential impacts of waste collection, transportation, and the location of potential disposal facilities upon the residents of Brentwood.

Policy IF 5-4: Locate waste collection, transfer, and processing facilities in areas that minimize impacts to the surrounding community.

Policy IF 5-6: Participate with Contra Costa County to implement a hazardous materials collection and disposal program.

ACTIONS

Action SA 4a: Provide educational opportunities for generators of small quantity, household, and agricultural waste products regarding their responsibilities for source reduction and proper and safe hazardous waste management and disposal.

Action SA 4b: Provide a convenient program for the local disposal of household hazardous wastes at Brentwood's Solid Waste Transfer Station on a routine basis. The availability of the program should be widely publicized throughout the community.

Action SA 4c: Work cooperatively with the East Contra Costa Fire Protection District to train local police and fire personnel in the specialized handling and cleanup procedures that are required for radioactive, toxic, and hazardous substance spills.

Action SA 4d: Prepare and maintain an inventory of environmentally contaminated sites to educate future property owners about contamination from previous uses. The City shall work directly with property owners in the cleanup of these sites, particularly in areas with redevelopment potential.

Impact 3.8-4: General Plan implementation is not located within an airport land use plan, two miles of a public airport or public use airport, or within the vicinity of a private airstrip, and would not result in a safety hazard for people residing or working in the project area (Less than Significant)

Hazards related to airports are typically grouped into two categories: air hazards and ground hazards. Air hazards jeopardize the safety of an airborne aircraft and expose passengers, pilots, and crews to danger. Examples of air hazards include tall structures, glare-producing objects, bird and wildlife attractants, radio waves from communication centers, or other features that have the potential to interfere with take-off or landing procedures, posing a risk to aircraft. Ground hazards jeopardize the safety of current and future residents and/or workers in the vicinity of an airport. The most obvious ground hazard is a crash, which may produce a serious, immediate risk to those residing in or using areas adjacent to the airport. Most accidents occur during take-off and landing. Therefore, the higher the density around an airport, including transportation facilities, the higher the risk associated with this type of hazard.

There are no airport facilities located within the Planning Area. The Byron Airport is the closest airport, located approximately eight miles southeast of the Planning Area. This airport is a County-owned facility that occupies approximately 1,307 acres. Brentwood does not lie within the Runway Protection Zone, Inner/Outer Safety Zones, Inner Turning Zone, Sideline Safety Zone, or Traffic Pattern Zone for this airport. None of the Planning Area lies within the land use compatibility zones for this airport.

The National Transportation Safety Board Aviation Accident Database identifies a total of nine aircraft accidents with Brentwood identified as the nearest location between January of 1983 to 2013 (National Transportation Safety Board, 2011). The accidents involved a variety of aircraft, including airplanes and helicopters. None of the accidents occurred in the Planning Area, and most were associated with private airstrips east of the Planning Area.

The General Plan does not include any policies or actions that would affect air hazards or safety. Implementation of the General Plan would have a **less than significant** impact with regard to this issue.

Impact 3.8-5: General Plan implementation does not have the potential to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (Less than Significant)

The General Plan would allow a variety of new development, including residential, commercial, industrial, and public service projects, which would result in increased jobs and population in Brentwood. Road and infrastructure improvements would occur to accommodate the new growth. Future projects are not anticipated to remove or impede evacuation routes and the General Plan does not include land uses, policies, or other components that conflict with adopted emergency response or evacuation plans.

The General Plan would improve transportation systems throughout the city and includes policies and actions designed to ensure that an emergency response plan is prepared and maintained. The General Plan would also ensure that the City's emergency access routes, emergency contact lists, and public information regarding designated facilities and routes are regularly reviewed to ensure that up to date information is available to the City and the public in the event of an emergency. Important new community safety facilities would be located outside of identified flood, geologic, and fire hazard areas to ensure these facilities are available in the event of a natural disaster. Implementation of the General Plan would have a **less than significant impact** with regard to this issue.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy SA 3-1: Continue to maintain and implement the Emergency Operations Plan.

Policy SA 3-2: Provide an effective communications system to properly respond to emergencies.

Policy SA 3-3: Keep emergency access routes free of traffic impediments.

Policy SA 3-4: Coordinate with the Contra Costa County Sheriff and the California Standardized Emergency Management System (SEMS) to ensure coordinated local and State-level responses in the event of an emergency.

Policy SA 3-5: Ensure that all areas of the city are accessible to emergency response providers.

Policy SA 3-6: Continue to promote public safety through public education programs.

Policy SA 3-7: Maintain effective mutual aid agreements for fire, police, medical response, mass care, heavy rescue, and other functions as appropriate.

Policy SA 3-8: Clearly communicate to the public the City's plans, procedures, and responsibilities in the event of a disaster or emergency.

Policy SA 3-9: Encourage residents and community leaders to participate in disaster training programs, such as the Community Emergency Response Team (CERT) program.

ACTIONS

Action SA 3a: Support regional earthquake preparedness activities such as strapping water heaters, organizing periodic citywide earthquake drills, providing first aid training and disaster preparedness classes to neighborhood groups, and encouraging residents and businesses to stockpile emergency food, water, and medical supplies.

Action SA 3b: Support regional disaster planning and emergency response planning efforts, including the Multi-Jurisdictional Local Government Hazard Mitigation Plan for the San Francisco Bay Area.

Action SA 3c: Encourage schools, neighborhood associations, mobile home park associations, and other interested groups to teach first aid and disaster preparedness, including Community Emergency Response Team (CERT) programs, Map Your Neighborhood programs, and other tools available to neighborhood and community groups to improve disaster preparedness.

Action SA 3d: Provide opportunities for periodic and ongoing training, including refresher courses, for residents who have completed local community disaster preparedness training.

Action SA 3e: Periodically review, maintain, and repair City roadways and emergency access routes, and provide signage, where necessary, to clearly identify emergency access routes.

Action SA 3f: Seek funding from State, Federal, and other sources to assist in emergency management planning, including community education and outreach describing public procedures and evacuation routes in the event of an emergency or natural disaster.

Action SA 3g: Develop and annually update an emergency contact list and emergency response information on the City's website. The information should include emergency access routes, available emergency resources, and contact information for emergency responders.

Action SA 3h: Develop a public information program which will provide all citizens with access to needed information concerning disaster preparedness and safety.

Action SA 3i: Conduct annual emergency response drills with key members of the City, local leaders, and emergency response personnel. The training should include the dissemination of information to the public regarding emergency response procedures, resources, and City responsibilities.

Action SA 3j: Establish procedures to allow local citizens and community groups to utilize City-owned facilities to conduct disaster training and preparedness training programs.

Action COS 7b: Develop and adopt a hillside grading and development ordinance. The ordinance should include standards for slope stability, building heights, lot coverage, ridgeline and site line protection, drainage, revegetation, erosion control, emergency vehicle access, and other standards determined to be applicable by the City.

Impact 3.8-6: General Plan implementation does not have the potential to 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 (Less than Significant)

Wildfires are a potential hazard to development and land uses located in the foothill and mountain areas of the county. The severity of wildfire problems depends on a combination of vegetation, climate, slope, and people. The grassland, chaparral, woodland, and forest vegetation found in areas of Contra Costa county, coupled with hot, dry summers, present extreme fire hazards during critical fire periods for much of the county. In addition to natural factors such as lightning, human activity is a primary factor contributing to the incidence of wildfires. Campfires, smoking, debris burning, arson, and equipment use are common human-related causes of wildfires.

The city of Brentwood is primarily devoid of CalFire fuel ranks. The exceptions are areas within the undeveloped Sphere of Influence in the southwestern portion of the Planning Area. These areas contain vegetation that possess characteristics warranting “moderate” fuel ranks. These areas possess combustible material in sufficient quantities combined with topographic characteristics that pose a wildfire risk. In contract, the majority of land in the city limits lacks the topographic characteristics that could significantly affect fire behavior. CalFire data for the foothill and mountain areas to the west of the Planning Area include a preponderance of “moderate” and “high” fuel ranks.

Local Responsibility Areas (LRA) are concentrated in the incorporated areas of Contra Costa county. Brentwood is an LRA that is served by the East Contra Costa Fire Protection District (ECCFPD). The ECCFPD provides fire protection services to Brentwood, Discovery Bay, Oakley, and Knightsen. The city of Brentwood is not categorized as a "Very High" FHSZ by CalFire.

State Responsibility Areas within the Planning Area are found to the southwest in the hilly terrain of the Diablo Foothills. Specifically, this includes the areas that are outside the city limits, but within the Sphere of Influence. The hilly terrain in the southwest portion of the Planning Area is categorized as a "Moderate" FHSZ. This "Moderate" FHSZ extends to the west where it transitions to “High” FHSZ in the steeper areas of the Diablo Foothills. The closest "Very High" FHSZ is located around Mount Diablo to the west.

There are no Federal Responsibility Areas within the vicinity of the Planning Area.

Development allowed under the General Plan would not place people and/or structures in areas at significant risk of wildland fires. All future projects allowed under the General Plan would be required to comply with the provisions of Federal, State, and local requirements related to wildland fire hazards, including State fire safety regulations associated with wildland-urban interfaces, fire-safe building standards, and defensible space requirements. As future development and infrastructure projects are considered by the City, each project would be evaluated for potential impacts, specific to the project, associated with wildland fire hazards as required under CEQA. The General Plan establishes policies and actions to address fire protection services, but

does not specifically address potential wildland fire hazards because there is no development proposed in the areas prone to wildfire hazards.

Implementation of the General Plan policies and actions would ensure that potential wildland fire hazards are mitigated through requirements for adequate water supply and water flow availability, ensuring adequate emergency access, adequate fire protection services, and ensuring public awareness regarding fire safety. Implementation of the General Plan would have a **less than significant** impact with regard to this issue.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy SA 3-7: Maintain effective mutual aid agreements for fire, police, medical response, mass care, heavy rescue, and other functions as appropriate.

Policy SA 4-4: Coordinate with the East Contra Costa Fire Protection District to ensure that businesses in Brentwood which handle hazardous materials prepare and file a Hazardous Materials Business Plan (HMBP). The HMBP shall consist of general business information, basic information on the location, type, quantity, and health risks of hazardous materials, and emergency response and training plans.

ACTIONS

Action SA 4c: Work cooperatively with the East Contra Costa Fire Protection District to train local police and fire personnel in the specialized handling and cleanup procedures that are required for radioactive, toxic, and hazardous substance spills.

Action IF 3b: Continue to explore alternative uses of recycled wastewater, including irrigation, dust control, soil compaction, fire protection, and investigate new technology for the use of recycled water as it is being developed.

REFERENCES

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This section provides a background discussion of the regional hydrology, flooding, water quality, water purveyors, and water sources in Brentwood. This section is organized with an existing setting, regulatory setting, and impact analysis.

Key Terms

Acre feet: The volume of one acre of water to a depth of one foot. Each acre-foot of water is equal to approximately 325,851.4 gallons.

BGS: Below ground surface.

GPD: Gallons per day.

GPM: Gallons per minute.

Groundwater: Water that is underground and below the water table, as opposed to surface water, which flows across the ground surface. Water beneath the earth's surface fills the spaces in soil, gravel, or rock formations. Pockets of groundwater are often called "aquifers" and are the source of drinking water for a large percentage of the population in the United States. Groundwater is often extracted using wells which pump the water out of the ground and up to the surface. Groundwater is naturally replenished by surface water from precipitation, streams, and rivers when this recharge reaches the water table.

MG: Million gallons

MGD: Million gallons per day

Surface water: Water collected on the ground or from a stream, river, lake, wetland, or ocean. Surface water is naturally replenished through precipitation, but is naturally lost through evaporation and seepage into soil.

3.9.1 EXISTING SETTING

REGIONAL HYDROLOGY

The city of Brentwood is located in eastern Contra Costa county approximately 50 miles east of San Francisco and 50 miles southwest of Sacramento. Brentwood is situated in the western portion of the San Joaquin Valley, immediately east of the Diablo Range which forms the eastern boundary of the Coast Ranges.

The topography of Brentwood is characterized by the relatively flat terrain typical of the Central Valley, with a few gently sloping hills in the southern and western portions of the city near the foothills of the Diablo Range. Elevations in Brentwood range from 25 feet above mean sea level (MSL) in the northeast portion of the city to 492 feet above MSL at the highest peak in the southwest portion of the city.

A series of east-west trending ridges and valleys extend eastward from the Diablo Range toward the San Joaquin Valley. Lone Tree Valley, Deer Valley, and Briones Valley form a set of drainage basins, which collect seasonal rainwater and direct runoff into a network of small streams and creeks in Brentwood. Marsh Creek is the largest of the waterways within Brentwood. Sand Creek, Deer Creek, and Dry Creek flow into Marsh Creek. In the southern portion of Brentwood, Marsh Creek has been dammed to form Marsh Creek Reservoir. Marsh Creek continues north from the reservoir, passes through Brentwood, and extends north to its confluence with the San Joaquin River located in the city of Oakley.

Climate

The Planning Area has cool and humid winters and hot and dry summers. Average daily temperature ranges from 35 to 92 degrees Fahrenheit (°F), but the extreme low and high temperatures have been 18°F and 117°F, respectively. The rainy season begins in November and ends in March. Average monthly precipitation during the winter months is about two to three inches, but records show that the monthly winter precipitation has been as high as eight inches and as low as zero inches. Water demands during the winter are relatively low. Low humidity usually occurs in the summer months, from May to September. The combination of hot and dry weather during the summer results in high water demand during these periods. Landscape irrigation, including lawn irrigation in the summer, significantly contributes to higher summer water demand.

WATERSHEDS

A watershed is a region that is bound by a divide that drains to a common watercourse or body of water. Watersheds serve an important biological function, oftentimes supporting an abundance of aquatic and terrestrial wildlife including special status species and anadromous and native local fisheries. Watersheds provide conditions necessary for riparian habitat.

The State uses a hierarchical naming and numbering convention to define watershed areas for management purposes. This means that boundaries are defined according to size and topography, with multiple sub-watersheds within larger watersheds. Table 3.9-1 shows the primary watershed classification levels used by the State. The second column indicates the approximate size that a watershed area may be within a particular classification level, although variation in size is common.

TABLE 3.9-1: STATE OF CALIFORNIA WATERSHED HIERARCHY NAMING CONVENTION		
WATERSHED LEVEL	*APPROXIMATE SQUARE MILES (ACRES)*	*DESCRIPTION*
Hydrologic Region (HR)	12,735 (8,150,000)	Defined by large-scale topographic and geologic considerations. The State of California is divided into ten HRs.
Hydrologic Unit (HU)	672 (430,000)	Defined by surface drainage; may include a major river watershed, groundwater basin, or closed drainage, among others.
Hydrologic Area (HA)	244 (156,000)	Major subdivisions of hydrologic units, such as by major tributaries, groundwater attributes, or stream components.
Hydrologic Sub-Area (HSA)	195 (125,000)	A major segment of an HA with significant geographical characteristics or hydrological homogeneity.

SOURCE: CALWATER, CALIFORNIA INTERAGENCY WATERSHED MAPPING COMMITTEE 2008

HYDROLOGIC REGION

The Planning Area is located within the San Joaquin River Hydrologic Region, which covers approximately 9.7 million acres (15,200 square miles) and includes all of Calaveras, Tuolumne, Mariposa, Madera, San Joaquin, and Stanislaus counties, most of Merced and Amador counties, and parts of Alpine, Fresno, Alameda, Contra Costa, Sacramento, El Dorado, and San Benito counties. Significant geographic features include the northern half of the San Joaquin Valley, the southern part of the Sacramento-San Joaquin Delta, the Sierra Nevada, and the Diablo Range. The region is home to about 1.6 million people. Major population centers include Merced, Modesto, and Stockton.

HYDROLOGIC UNIT

The Planning Area is within the northwestern part of the San Joaquin Delta hydrologic unit (HUC 8), which covers approximately 610,421 acres. The San Joaquin Delta hydrologic unit drains to the San Joaquin River and Delta region, which drains to the San Francisco Bay. The Lower Sacramento hydrologic unit is located to the north and the Suisun Bay hydrologic unit is located to the east. Figure 3.9-1 illustrates the boundaries of the hydrologic units relative to the Planning Area.

HYDROLOGIC AREA

For purposes of planning on a citywide basis, hydrologic areas are generally considered to be the appropriate watershed planning level. As a planning area becomes smaller the hydrologic area level may be too large in terms of scale, and a hydrologic subarea may be considered more appropriate. The Planning Area is located within six hydrologic areas. These include: Lower Marsh Creek, Upper Marsh Creek, Lower Kellogg Creek, Upper Kellogg Creek, Dutch Slough-Big Break, and Markley Canyon-San Joaquin River. Figure 3.9-2 illustrates the Planning Area on a USGS map. Figure 3.9-3 illustrates the boundaries of the hydrologic area relative to the Planning Area.

HYDROLOGIC SUB-AREA

There are numerous hydrologic sub-areas within and throughout Brentwood and the city's Planning Area. Analysis of hydrologic sub-areas is appropriate for the review of individual projects, but is not appropriate for the watershed analysis of the City's General Plan.

CREEKS AND FLOOD CONTROL FACILITIES

Brentwood is almost completely within the Marsh Creek Watershed. The watershed includes 60,000 acres of urban, scenic hills, and rural/agricultural land. The watershed has about 15% impervious coverage. The watershed extends from the eastern side of the Mount Diablo foothills downstream to the San Joaquin River Delta at Big Break. The average annual rainfall for this watershed is 17 inches (CCCCDP Nov 2003). The average annual rainfall for the city of Brentwood is approximately 12 inches (CCCPWD).

The largest creek draining this watershed is Marsh Creek, which generally flows from the east to the west near the southern boundary of the watershed and from the south to the north near the eastern boundary of the watershed. Marsh Creek flows from the south to the north through the center of the city of Brentwood. Within the city, the upstream segment (southern quarter) of the creek is still a natural creek; however, the downstream segment of the creek has been converted from a natural creek to a flood control channel (CCCCDP 2003). The Marsh Creek Reservoir and Dam are located along Marsh Creek upstream of the city. The Reservoir and Dam are owned and operated by the Contra Costa County Flood Control and Water Conservation District (CCCFCWCD) (Consolacion, 2013). The dam reduces the flow rate in Marsh Creek, thereby reducing the potential for flooding along the creek within the city of Brentwood. Dry Creek, Deer Creek, and Sand Creek each flow from the west to the east and join Marsh Creek within the city of Brentwood.

Dry Creek is located in the southern portion of the city, and is about 5.8 miles in length (CCCCDP 2003). The Dry Creek Reservoir is located along Dry Creek near the west boundary of the city. The Dry Creek Basin is located along the creek within the city in Creekside Park (Consolacion, 2013). Each of these facilities reduces the flow in Dry Creek, thereby reducing the potential for flooding downstream from the facility.

Deer Creek is located north of Dry Creek. Deer Creek is about nine miles long (CCCCDP 2003). Within the city, the western segment of Deer Creek is still a natural creek; but the eastern segment of Deer Creek has been converted from a natural creek to a flood control channel. The Deer Creek Reservoir is located along Deer Creek west of the city of Brentwood (Consolacion, 2013). The Deer Creek Basin is located within the city near the intersection of Buena Vista Street and Fairview Avenue. Each of these facilities reduce the flow in Deer Creek, thereby reducing the potential for flooding downstream of the facility.

Sand Creek is located north of Deer Creek near the center of the city. Sand Creek is about 19 miles long (CCCCDP 2003). Within the city, the eastern segment of Sand Creek has been converted to a flood control channel. The Upper Sand Creek Basin is located along Sand Creek west of the city (Consolacion, 2013). The Lower Sand Creek Basin is located within the city near the intersection north of Sand Creek Road and east of Highland Road. The CCCFCWCD is currently in the process of

designing and constructing an expansion of the Upper Sand Creek Basin so that it will provide a greater level of downstream flood protection. Each of these facilities reduce the flow in Sand Creek, thereby reducing the potential for flooding downstream of the facility.

The City of Brentwood owns and operates most of the smaller storm drainage systems within the city. Additionally, the City owns two detention basins in The Vineyards subdivision. There are no stormwater pump stations within the city. In addition to the major CCCFCWCD facilities described above, the CCCFCWCD also owns several trunk storm drains and smaller detention basin facilities (Consolacion, 2013). The storm drains generally range in size from 24-inches to 72-inches in diameter. The smaller detention basins provide up to about 125 acre-feet of runoff storage.

FLOODPLAIN MAPPING

FEMA Flood Zones

FEMA mapping provides important guidance for the City in planning for flooding events and regulating development within identified flood hazard areas. FEMA's National Flood Insurance Program (NFIP) is intended to encourage State and local governments to adopt responsible floodplain management programs and flood measures. As part of the program, the NFIP defines floodplain and floodway boundaries that are shown on Flood Insurance Rate Maps (FIRMs). The FEMA FIRM for the Planning Area is shown on Figure 3.9-4.

Areas that are subject to flooding are indicated by a series of alphabetical symbols, indicating anticipated exposure to flood events:

- **Zone A:** Subject to 100-year flooding with no base flood elevation determined. Identified as an area that has a one percent chance of being flooded in any given year.
- **Zone AE:** Subject to 100-year flooding with base flood elevations determined.
- **Zone AH:** Subject to 100-year flooding with flood depths between one and three feet being areas of ponding with base flood elevations determined.
- **500-year Flood Zone:** Subject to 500-year flooding. Identified as an area that has a 0.2 percent chance of being flooded in a given year.

The Planning Area is subject to flooding problems along the natural creeks and drainages that traverse the area. Marsh Creek, Dry Creek, Deer Creek, and Sand Creek are the most prominent drainages in the Planning Area that are subject to flooding. The 100-year flood plain is largely confined to the drainage channels along these creeks, except along Marsh Creek starting near Dainty Avenue and extending northeast through the city to the city limits. In this area, the 100-year and 500-year flood plain extends onto properties that are located immediately adjacent to this drainage.

Dam Inundation

Earthquakes centered close to a dam are typically the most likely cause of dam failure. Dam Inundation maps have been required in California since 1972, following the 1971 San Fernando Earthquake and near failure of the Lower Van Norman Dam. The Planning Area has four dams that

are identified by the Division of Safety of Dams as Major Dams; the Los Vaqueros Dam, Marsh Creek Dam, Deer Creek Dam, and Dry Creek Dam. Each dam is briefly described below:

- The Los Vaqueros Dam, owned and operated by the Contra Costa Water District, is an earthen dam located on Kellogg Creek. This dam was built in 1997 and raised in 2012 to a height of 226 feet with a reservoir capacity of 160,000 acre-feet.
- The Marsh Creek Dam, owned and operated by the Contra Costa County Flood Control and Water Conservation District, is an earthen dam located on Marsh Creek. This dam was built in 1963 at a height of 59 feet with a reservoir capacity of 4,425 acre-feet.
- The Deer Creek Dam, owned and operated by the Contra Costa County Flood Control and Water Conservation District, is an earthen dam located on Deer Creek. This dam was built in 1963 at a height of 28 feet with a reservoir capacity of 233 acre-feet.
- The Dry Creek Dam, owned and operated by the Contra Costa County Flood Control and Water Conservation District, is an earthen dam located on Dry Creek. This dam was built in 1963 at a height of 30 feet with a reservoir capacity of 300 acre-feet.

These four dams do not have a history of dam failure; however, these dams are identified as having the potential to inundate habitable portions of the Planning Area in the unlikely event of dam failure. The dam owners/operators, Contra Costa Water District and Contra Costa County Flood Control and Water Conservation District, are responsible for the management, monitoring, and improvements to these dams to reduce the risk of dam failure and inundation.

STORMWATER QUALITY

Potential hazards to surface water quality include the following nonpoint pollution problems: high turbidity from sediment resulting from erosion of improperly graded construction projects, concentration of nitrates and dissolved solids from agriculture or surfacing septic tank failures, contaminated street and lawn run-off from urban areas, and warm water drainage discharges into cold water streams.

The most critical period for surface water quality is following a rainstorm which produces significant amounts of drainage runoff into streams at low flow, resulting in poor dilution of contaminates in the low flowing stream. Such conditions are most frequent during the fall at the beginning of the rainy season when stream flows are near their lowest annual levels. Besides the greases, oils, pesticides, litter, and organic matter associated with such runoff, heavy metals such as copper, zinc, and cadmium can cause considerable harm to aquatic organisms when introduced to streams in low flow conditions.

Surface water pollution is also caused by erosion. Excessive and improperly managed grading, vegetation removal, quarrying, logging, and agricultural practices all lead to increased erosion of exposed earth and sedimentation of watercourses during rainy periods. In slower moving water bodies these same factors often cause a buildup of siltation, which ultimately reduces the capacity of the water system to percolate and recharge groundwater basins, as well as adversely affecting both aquatic resources and flood control efforts.

303(d) Impaired Water Bodies: Section 303(d) of the Federal Clean Water Act requires states to identify waters that do not meet water quality standards or objectives and, thus, are considered "impaired." Once listed, Section 303(d) mandates prioritization and development of a Total Maximum Daily Load (TMDL). The TMDL is a tool that establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby the basis for the states to establish water quality-based controls. The purpose of TMDLs is to ensure that beneficial uses are restored and that water quality objectives are achieved.

The Planning Area has three water bodies listed on the 2010 Section 303(d) list of impaired water bodies. Marsh Creek (Dunn Creek to Marsh Creek Reservoir), Marsh Creek (Marsh Creek Reservoir to San Joaquin River), and Marsh Creek Reservoir are listed as Category 5 segments, which means they are a water segment where standards are not met and a TMDL is required, but not yet completed, for at least one of the pollutants being listed for this segment.

- Marsh Creek (Dunn Creek to Marsh Creek Reservoir): The pollutants listed for this segment include: mercury and metals. The estimated size of the area affected is 11 miles. The TMDL is estimated to be completed by 2015.

- Marsh Creek (Marsh Creek Reservoir to San Joaquin River): The pollutants listed for this segment include: diazinon (pesticide), *Escherichia coli* (pathogen), mercury, sediment toxicity, and unknown toxicity. The estimated size of the area affected is 10 miles. The TMDL is estimated to be completed between 2015 and 2021 for each pollutant.

- Marsh Creek Reservoir: The pollutant listed for this segment includes mercury. The estimated size of the area affected is 278 acres. The TMDL is estimated to be completed by 2015.

The County of Contra Costa, CCCFCWCD, and the Cities of Antioch, Brentwood, and Oakley are member agencies of the Contra Costa Clean Water Program (CCCWP). The CCCWP was created in 1993 and also includes 18 other incorporated cities. The purpose of the CCCWP is to manage and protect the water quality of the stormwater runoff and creeks in Contra Costa County and in the member cities. The Central Valley Regional Water Quality Control Board issued National Pollution Discharge Elimination System (NPDES) Waste Discharge Requirements (Order R5-2010-0102, NPDES Permit No. CAS083313) to the CCCWP on September 23, 2010.

This Order requires implementation of Best Management Practices (BMPs) to reduce the level of pollutants in the stormwater to the maximum extent practicable. Some of the more important requirements are summarized below. The members of the CCCWP are called permittees in the discussion below:

- The Permittees shall, within their respective jurisdictions, effectively prohibit the discharge of non-stormwater into storm drain systems and watercourses. It shall be prohibited to discharge rubbish, refuse, bark, sawdust, or other solid wastes into surface waters.

- Permittees shall use their planning authorities to 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. This 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, evapotranspiring, and/or biotreating the stormwater runoff close to its source. LID employs principles such as preserving and recreating natural landscape features and minimizing imperviousness to create functional and appealing site drainage that treats stormwater as a resource, rather than a waste product. Practices used to adhere to these LID principles include measures such as rain barrels and cisterns, green roofs, permeable pavement, preserving undeveloped open space, and biotreatment through rain gardens, bioretention units, bioswales, and planter/tree boxes.

- Each Permittee shall implement an industrial and commercial site control program at all sites which could reasonably be considered to cause or contribute to pollution of stormwater runoff, with inspections and effective follow-up and enforcement to abate actual or potential pollution sources.
- Permittees shall develop and implement an illicit discharge program that includes an active surveillance component and a centralized complaint collection and follow-up component to prevent illicit discharge into stormwater. Permittees shall maintain a complaint tracking and follow-up data system.
- Each Permittee shall implement a construction site inspection and control program at all construction sites.
- Through outreach programs, each Permittee shall increase the knowledge of residents regarding the impacts of stormwater pollution on receiving water and potential solutions to mitigate the problems change, the waste disposal and runoff pollution generation behavior of residents by encouraging implementation of appropriate solutions, and involve various citizens in mitigating the impacts of stormwater pollution.
- Prevent the impairment of urban streams by pesticide-related toxicity.
- Reduce trash loads from municipal stormwater systems by 40% by 2015, 70% by 2018, and 100% by 2023.
- Implement a Total Mercury and Methylmercury control program.

WATER RESOURCES

Water Supplies

The City of Brentwood has the following existing water supplies:

- Treated surface water for potable water uses
- Untreated surface water for landscape irrigation and industrial uses
- Groundwater for potable water uses
- Recycled water for nonpotable water uses

Approximately 58% of the City's water supply is from treated surface water, 30% from groundwater, 10% from untreated surface water for landscape irrigation, and 0.5% from recycled water (City of Brentwood UWMP, 2010). Each source of supply is described below.

SURFACE WATER

Brentwood's surface water supply is from the San Joaquin River Delta. In 2004, the City entered into an agreement with the East Contra Costa Irrigation District (ECCID) that provides the City with a permanent entitlement to purchase 14,800 acre-feet per year (AFY) of surplus irrigation water from the Delta. ECCID has pre-1914 water rights, which are not subject to delivery reductions during water shortages, including regulatory restricted and drought years. The water purchased by the City may only be used by the City and its retail customers within the City limits or within the ECCID service area (CCCLAFCO, 2007).

The City can receive treated surface water from two water treatment plants: the City of Brentwood Water Treatment Plant (COBWTP) and the Randall Bold Water Treatment Plant (RBWTP).

The COBWTP was built in 2008 to serve the City. The project was a joint venture between the City and the Contra Costa Water District (CCWD). The City owns the facility and is responsible for operating and capital costs. The City contracts with CCWD to provide operations and maintenance for the facility. The COBWTP, located in Oakley, has a current capacity of 16.5 mgd, with an ultimate capacity of 30 mgd. The COBWTP is anticipated to meet the City's demands through 2040. The COBWTP treats raw water that the City purchases from ECCID and diverts from Old River and Rock Slough. Plant processes include flocculation, sedimentation, ozonation, and filtration. Treated water is disinfected using chloramines. The water treatment plant (WTP) supplies the distribution system via a booster pump station located at the plant and a large diameter transmission pipeline.

Prior to completion of the COBWTP, the City's ECCID supply was treated at the RBWTP. The RBWTP, located adjacent to the COBWTP, is jointly owned by Diablo Water District (DWD) and CCWD, and is operated by CCWD. The DWD portion of the facility delivers water to the City of Oakley. The CCWD portion of the facility supplies water to the cities of Brentwood and Antioch, the Golden State Water Company (Bay Point), and CCWD's Treated Water Service Area. The COBWTP and the RBWTP are located adjacent to one another and share certain facilities and operational staff. Some facilities are owned by CCWD or owned by the RBWTP under a Joint Powers Agreement with the Cities of Antioch, Brentwood, and Oakley, as well as Contra Costa County. The COBWTP has interim use of the RBWTP's service roads until a separate, independent access road can be constructed by the City on Empire Avenue (CCWD, 2011). The City has purchased a permanent capacity share of 6 mgd in the RBWTP, entitling the City to up to 6 mgd of treated water for use within the area that overlaps between the City and CCWD, with the source of this water from the City's ECCID supply (CCLAFCO, 2007). The City also has the ability to purchase additional treated water from CCWD (City of Brentwood UWMP, 2011).

The City obtains raw surface water for non-potable landscape irrigation from the ECCID Canal. Water is pumped to the non-potable irrigation system via the Roddy Ranch Pump Station, located on the canal. Current users include golf courses, parks, schools, and commercial landscape areas.

The City purchased 397 million gallons (1.09 mgd average daily use) in 2010. The City projects a purchase of about 500 million gallons per year by 2035 (City of Brentwood UWMP, 2011).

GROUNDWATER

The City has 9 permitted wells within its service area, 7 of which are active wells. The City has 2 main well fields, with 5 of the wells located in the northeast part of the City, and 2 wells located to the south.

City wells have capacities ranging from 0.36 mgd (250 gpm) to 1.44 mgd (1,000 gpm). The total design capacity of the wells is 6.63 mgd. The firm design capacity of the wells, where firm capacity is the capacity of all the wells minus the capacity of the largest well, is 5.19 mgd. Annual production from the seven active wells averaged 4.13 mgd for the 2000 through 2010 period.

Table 3.9-2 summarizes annual pumped groundwater volumes from 2006 to 2010. The percentage of groundwater supply versus total water supply has decreased over the years because of increases in the use of surface water supplies from the City of Brentwood Water Treatment Plant and recycled water supplies from the Brentwood Wastewater Treatment Plant.

TABLE 3.9-2: GROUNDWATER (VOLUME PUMPED- MILLION GALLONS PER YEAR)

	2006	*2007*	*2008*	*2009*	*2010*
Total Groundwater Pumped	1,886	1,331	1,474	1,235	1,152
Groundwater as a percent of total water supply	48%	30%	33%	29%	29%

SOURCE: CITY OF BRENTWOOD URBAN WATER MANAGEMENT PLAN (2010).

Table 3.9-3 presents the volume of groundwater projected to be pumped from 2015 to 2035. Projected percentages of total water supply remain consistent with those in the recent past (i.e., 2009 and 2010).

TABLE 3.9-3: GROUNDWATER (VOLUME PROJECTED TO BE PUMPED- MILLION GALLONS PER YEAR)

	2015	*2020*	*2025*	*2030*	*2035*
Total Groundwater Pumped	1,234	1,229	1,351	1,423	1,492
Groundwater as a percent of total water supply	30%	29%	29	28%	28%

SOURCE: CITY OF BRENTWOOD URBAN WATER MANAGEMENT PLAN (2010).

Groundwater is treated with chloramines for disinfectant at the wellhead prior to delivery to the distribution system. Of the wells that are not in use, one does not currently have a disinfection system, and the other is not used due to high nitrate concentrations.

The City's wells are located within the northwest part of the Tracy Subbasin of the San Joaquin Valley Groundwater Basin. The Tracy Subbasin has a total surface area of 539 square miles and is bounded by the Diablo Range of the Coast Range foothills on the west, the San Joaquin and Mokelumne Rivers on the north, the San Joaquin River to the east, and the San Joaquin-Stanislaus county line on the south. The Tracy Subbasin is comprised of continental deposits of Late Tertiary to Quaternary age. Deposits include the Tulare Formation, Older Alluvium, Flood Basin Deposits, and Younger Alluvium (California Department of Water Resources, 2006). The City's wells range in

depth from 200 to 660 feet, and draw from the Tulare Formation, which consists of semi-consolidated, poorly sorted, discontinuous deposits of clay, silt, and gravel. The Corcoran clay occurs near the top of the formation and confines the underlying fresh water deposits formed by deposition from streams that originate in the Coast Range hills to the west.

A California Department of Water Resources review of hydrographs (plots of water levels over time) indicates that except for seasonal variation resulting from recharge and pumping, the majority of water levels in wells have remained relatively stable over at least the 10 year period prior to 2006. A groundwater budget, estimating the subbasin inflows and outflows, has not been prepared for the subbasin.

RECYCLED WATER SUPPLIES

Recycled water is an important part of the City's water resources. Recycled water allows the City to conserve potable water, thereby ensuring a reliable water supply for current and future demand. The City of Brentwood Wastewater Treatment Plant is used for treatment and disposal, or reuse, of wastewater generated in the City's service area. Wastewater is collected by gravity in a series of mains, trunks, and interceptors. Collected wastewater is then transported to the Wastewater Treatment Plant, which currently has a treatment capacity of 5 mgd but is capable of expanding to 10 mgd in 2.5 mgd increments during peak wet-weather flows. In 2010, the average influent to the Wastewater Treatment Plant was 3.16 mgd. The Wastewater Treatment Plant's tertiary treatment provides recycled water for landscaping as well as processes at the Antioch Building Materials concrete batch plant. According to the City's 2010 billing records, the Wastewater Treatment Plant supplied 1.1 million gallons of recycled water to the concrete batch plant and 17 million gallons to five landscape users (e.g., commercial enterprises and parkways) in 2010. Table 3.9-4 summarizes the historic and projected volumes of collected and treated wastewater that could be delivered for recycled water uses.

TABLE 3.9-4 RECYCLED WATER (WASTEWATER COLLECTION AND TREATMENT)

WASTEWATER TYPE	*2005*	*2010*	*2015*	*2020*	*2025*	*2030*	*2035*
Wastewater Collected and Treated in Service Area	1,168	1,176	2,562	3,947	5,620	9,200	9,200
Volume that Meets Recycled Water Standard	1,087	1,166	2,462	3,794	5,401	7,087	8,842

SOURCE: CITY OF BRENTWOOD URBAN WATER MANAGEMENT PLANT (2010).

NON POTABLE WATER

The City obtains raw water via the Roddy Ranch Pump Station on the East Contra Costa Irrigation District Canal to the non-potable distribution system. It is used primarily for irrigation purposes. Current users include golf courses, parks and parkways, schools, and commercial landscaped areas. Table 3.9-5 presents the contracted and projected non-potable water demands from 2015 through 2035.

TABLE 3.9-5: RETAIL AGENCY DEMAND PROJECTIONS PROVIDED TO WHOLESALE SUPPLIERS					
2010 CONTRACTED VOLUME	*2015 PROJECTED VOLUME*	*2020 PROJECTED VOLUME*	*2025 PROJECTED VOLUME*	*2030 PROJECTED VOLUME*	*2035 PROJECTED VOLUME*
397 mgy	425 mgy	424 mgy	466 mgy	491 mgy	514 mgy

SOURCE: CITY OF BRENTWOOD URBAN WATER MANAGEMENT PLANT (2010).

Water Demands

The City has approximately 17,000 water service accounts. Total water production in 2008, the city's highest use year, was 4,537 million gallons per year. The predominant use was potable use, with some untreated water and recycled water served for landscape irrigation. Statistics are not available for 2008, however in 2010, 88% of water was potable use, and 12% was non-potable use. Total production equates to an average production of 12.4 million gallons per day (mgd).

The city has experienced significant growth in population in the last 10 years, with corresponding growth in water use. In 2001, the city's population was 26,200 and the city's water use was about 2,200 million gallons per year (5.9 mgd average daily water use). By 2010, the city's population had grown to 51,400, with an annual water use of about 3,900 million gallons per year (10.7 mgd average daily water use). The city, like most communities in California, has experienced lower water use in recent years due to drought and the downturn in the economy.

The city's water use is predominantly by residential customers. Of the 16,000 water service accounts, 14,900 are single-family residential accounts. Single-family residential use accounts for 65% of total water consumption. Landscape irrigation accounts for 27% of total water use, commercial/institutional for 5% of use, multi-family residential for 3% of total use, and other for 0.5% of total use (City of Brentwood UWMP, 2010, completed May 24, 2011).

The city's projected average annual use at buildout is about 7,100 million gallons/year (19.5 mgd average daily demand). Buildout demand is currently projected to occur by 2040.

Water use varies seasonally, with maximum water use typically occurring during the months of June, July, August, and September, due to increased landscape irrigation. The City must be able to meet demand from all supply sources on the maximum demand day of the year, and also provide adequate water distribution system facilities to supply customers and maintain adequate pressure on the maximum demand day. The City projects a maximum demand of 41 mgd at buildout (City of Brentwood UWMP, 2010).

Summary of Water Demands and Supplies

Table 3.9-6 summarizes annual projections of demands and supplies to meet those demands through 2035, as documented in the City's 2010 Urban Water Management Plan. Table 3.9-7 summarizes the same information for projected maximum day demands and supplies. Table 3.9-7 shows a range in demands from 2010 through 2035 based on two different growth rate

projections, a high-growth curve, developed from earlier studies for the COBWTP, and a straight-line growth rate. Actual water demands are expected to fall in between these two projections.

TABLE 3.9-6: PROJECTED WATER DEMANDS AND SUPPLIES (MILLION GALLONS PER YEAR)

	2010	2015	2020	2025	2030	2035
Demand	3,020	3,768	3,754	4,125	4,345	4,556
Supplies						
RBWTP	563	603	601	660	695	729
COBWTP	1,704	1,824	1,817	1,997	2,103	2,205
Non-Potable Water	397	425	424	466	491	514
Groundwater	1,152	1,234	1,229	1,351	1,423	1,492
Recycled Water	18	18	45	133	224	311
Meter Adjustments	320	320	337	565	565	565
Totals (as reported in Table 5-1 in UWMP)	**3,905**	**4,180**	**4,192**	**4,689**	**5,023**	**5,343**
Difference between Supply and Demand	*885*	*412*	*438*	*564*	*678*	*787*
Totals with numbers as shown (with meter adjustments added)	***4,154***	***4,424***	***4,453***	***5,172***	***5,501***	***5,816***
Totals if meter adjustments are subtracted	***3,834***	***4,104***	***4,116***	***4,607***	***4,936***	***5,251***

SOURCE: 2010 URBAN WATER MANAGEMENT PLAN

TABLE 3.9-7: CURRENT AND PROJECTED MAXIMUM DAY POTABLE DEMANDS AND SUPPLIES (MGD)

	2010	2015	2020	2025	2030	2035
Maximum Daily Demand[1]	18.5-23	22-29	26-35	30-36.5	33.5-38	37-39.5
Well Supply	5	5	5	5	5	5
RBWTP and COBWTP Supply	10-12	13.5-18	17-24	21-24	28.5-31.5	32-34.5
Total Supply	**18.5-23**	**22-29**	**26-35**	**30-36.5**	**33.5-38**	**37-39.5**

SOURCE: WEST YOST ASSOCIATES, 2013

1: Range in demands is based on two possible growth scenarios. The lower numbers are based on a straight-line growth scenario from 2010 through 2040. The higher numbers are based on a high growth rate scenario in which water demands increase more rapidly through 2020, and then more slowly from 2020 to 2040.

3.9.2 REGULATORY SETTING

There are a number of regulatory agencies whose responsibility includes the oversight of the water resources of the state and nation including the Federal Emergency Management Agency, the US Environmental Protection Agency, the State Water Resources Board, and the Regional Water Quality Control Board. The following is an overview of the federal, state and local regulations that are applicable to the proposed project.

FEDERAL REGULATIONS

Clean Water Act (CWA)

The CWA, initially passed in 1972, regulates the discharge of pollutants into watersheds throughout the nation. Section 402(p) of the act establishes a framework for regulating municipal and industrial stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) Program. Section 402(p) requires that stormwater associated with industrial activity that discharges either directly to surface waters or indirectly through municipal separate storm sewers must be regulated by an NPDES permit.

The State Water Resources Control Board (SWRCB) is responsible for implementing the Clean Water Act and does so through issuing NPDES permits to cities and counties through regional water quality control boards. Federal regulations allow two permitting options for storm water discharges (individual permits and general permits). The SWRCB elected to adopt a statewide general permit (Water Quality Order No. 2003-0005-DWQ) for small Municipal Separate Storm Sewer Systems (MS4s) covered under the CWA to efficiently regulate numerous storm water discharges under a single permit, however, this does not apply to Brentwood. The Central Valley RWQCB has issued a large municipality permit to cities in Contra Costa County, including Antioch, Brentwood, and Oakley, as well as unincorporated portions in the east County (WDR Order R-5-2010-2012, NPDES Permit No. CA5083313, 9/23/10). Permittees must meet the requirements in Provision D of the General Permit, which require the development and implementation of a Storm Water Management Plan (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable. The SWMP must include the following six minimum control measures:

1. Public Education and Outreach on Storm Water Impacts
2. Public Involvement/Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Storm Water Runoff Control
5. Post-Construction Storm Water Management in New Development
6. Redevelopment and Pollution Prevention/Good Housekeeping for Municipal Operations

Federal Emergency Management Agency (FEMA)

FEMA operates the National Flood Insurance Program (NFIP). Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 has adopted as a desired level of protection, an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of occurrence on the order of once in 100 years, although such a flood may occur in any given year. Communities are occasionally audited by the California Department of Water Resources to insure the proper implementation of FEMA floodplain management regulations.

Flood Control Act

The Flood Control Act (1917) established survey and cost estimate requirements for flood hazards in the Sacramento Valley. All levees and structures constructed per the Act were to be maintained locally but controlled federally. All rights of way necessary for the construction of flood control infrastructure were to be provided to the Federal government at no cost.

Federal involvement in the construction of flood control infrastructure, primarily dams and levees, became more pronounced upon passage of the Flood Control Act of 1936.

Flood Disaster Protection Act (FDPA)

The FDPA of 1973 was a response to the shortcomings of the NFIP, which were experienced during the flood season of 1972. The FDPA prohibited Federal assistance, including acquisition, construction, and financial assistance, within delineated floodplains in non-participating NFIP communities. Furthermore, all Federal agencies and/or federally insured and federally regulated lenders must require flood insurance for all acquisitions or developments in designated Special Flood Hazard Areas (SFHAs) in communities that participate in the NFIP.

Improvements, construction, and developments within SFHAs are generally subject to the following standards:

- All new construction and substantial improvements of residential buildings must have the lowest floor (including basement) elevated to or above the base flood elevation (BFE).
- All new construction and substantial improvements of non-residential buildings must either have the lowest floor (including basement) elevated to or above the BFE or dry-floodproofed to the BFE.
- Buildings can be elevated to or above the BFE using fill, or they can be elevated on extended foundation walls or other enclosure walls, on piles, or on columns.
- Extended foundation or other enclosure walls must be designed and constructed to withstand hydrostatic pressure and be constructed with flood-resistant materials and contain openings that will permit the automatic entry and exit of floodwaters. Any enclosed area below the BFE can only be used for the parking of vehicles, building access, or storage.

National Flood Insurance Program (NFIP)

Per the National Flood Insurance Act of 1968, the NFIP has three fundamental purposes: *Better indemnify individuals for flood losses through insurance; Reduce future flood damages through State and community floodplain management regulations; and Reduce Federal expenditures for disaster assistance and flood control.*

While the Act provided for subsidized flood insurance for existing structures, the provision of flood insurance by FEMA became contingent on the adoption of floodplain regulations at the local level.

National Pollutant Discharge Elimination System (NPDES)

National Pollutant Discharge Elimination System (NPDES) permits are required for discharges to navigable waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, oceans, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. NPDES permits are issued under the Federal Clean Water Act, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.)

The RWQCB issues these permits in lieu of direct issuance by the Environmental Protection Agency, subject to review and approval by the EPA Regional Administrator (EPA Region 9). The terms of these NPDES permits implement pertinent provisions of the Federal Clean Water Act and the Act's implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries, and anti-degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable so as to achieve the Clean Water Act's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the CWA.

These NPDES permits regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. NPDES permits are issued for five years or less, and therefore must be updated regularly. The rapid and dramatic population and urban growth in the Central Valley Region has caused a significant increase in NPDES permit applications for new waste discharges. To expedite the permit issuance process, the RWQCB has adopted several general NPDES permits, each of which regulates numerous discharges of similar types of wastes. The SWRCB has issued general permits for stormwater runoff from construction sites statewide. Stormwater discharges from industrial and construction activities in the Central Valley Region can be covered under these general permits, which are administered jointly by the SWRCB and RWQCB.

Rivers and Harbors Appropriation Act of 1899

One of the country's first environmental laws, this Act established a regulatory program to address activities that could affect navigation in Waters of the United States.

Water Pollution Control Act of 1972

The Water Pollution Control Act (WPCA) established a program to regulate activities that result in the discharge of pollutants to waters of the United States

STATE REGULATIONS

Assembly Bill 162

This bill requires a general plan's land use element to identify and annually review those areas covered by the general plan that are subject to flooding as identified by flood plain mapping prepared by the Federal Emergency Management Agency (FEMA) or the Department of Water Resources (DWR). The bill also requires, upon the next revision of the housing element, on or after January 1, 2009, the conservation element of the general plan to identify rivers, creeks, streams, flood corridors, riparian habitat, and land that may accommodate floodwater for purposes of groundwater recharge and stormwater management. By imposing new duties on local public officials, the bill creates a State-mandated local program.

This bill also requires, upon the next revision of the housing element, on or after January 1, 2009, the safety element to identify, among other things, information regarding flood hazards and to establish a set of comprehensive goals, policies, and objectives, based on specified information for the protection of the community from, among other things, the unreasonable risks of flooding.

Assembly Bill 70

This bill provides that a city or county may be required to contribute its fair and reasonable share of the property damage caused by a flood to the extent that it has increased the State's exposure to liability for property damage by unreasonably approving, as defined, new development in a previously undeveloped area, as defined, that is protected by a State flood control project, unless the city or county meets specified requirements.

California Code of Regulations

California Code of Regulations (CCR) Title 22, Chapter 15, Article 20 requires all public water systems to prepare a Consumer Confidence Report for distribution to its customers and to the Department of Health Services. The Consumer Confidence Report provides information regarding the quality of potable water provided by the water system. It includes information on the sources of the water, any detected contaminants in the water, the maximum contaminants levels set by regulation, violations and actions taken to correct them, and opportunities for public participation in decisions that may affect the quality of the water provided.

California Government Code

The Senate and Assembly bills identified above have resulted in various changes and additions to the California Government Code. Key sections related to the above referenced bills are identified below.

Section 65302

Revised safety elements must include maps of any 200-year flood plains and levee protection zones within the Planning Area.

Section 65584.04

Any land having inadequate flood protection, as determined by FEMA or DWR, must be excluded from land identified as suitable for urban development within the planning area.

Section 8589.4

California Government Code §8589.4, commonly referred to as the Potential Flooding-Dam Inundation Act, requires owners of dams to prepare maps showing potential inundation areas in the event of dam failure. A dam failure inundation zone is different from a flood hazard zone under the National Flood Insurance Program (NFIP). NFIP flood zones are areas along streams or coasts where storm flooding is possible from a "100-year flood." In contrast, a dam failure inundation zone is the area downstream from a dam that could be flooded in the event of dam failure due to an earthquake or other catastrophe. Dam failure inundation maps are reviewed and approved by the California Office of Emergency Services (OES). Sellers of real estate within inundation zones are required to disclose this information to prospective buyers.

California Department of Health Services

The Department of Health Services, Division of Drinking Water and Environmental Management, oversees the Drinking Water Program. The Drinking Water Program regulates public water systems and certifies drinking water treatment and distribution operators. It provides support for small water systems and for improving their technical, managerial, and financial capacity. It provides subsidized funding for water system improvements under the State Revolving Fund ("SRF") and Proposition 50 programs. The Drinking Water Program also oversees water recycling projects, permits water treatment devices, supports and promotes water system security, and oversees the Drinking Water Treatment and Research Fund for MTBE and other oxygenates.

Consumer Confidence Report Requirements

California Code of Regulations (CCR) Title 22, Chapter 15, Article 20 requires all public water systems to prepare a Consumer Confidence Report for distribution to its customers and to the Department of Health Services. The Consumer Confidence Report provides information regarding the quality of potable water provided by the water system. It includes information on the sources of the water, any detected contaminants in the water, the maximum contaminant levels set by regulation, violations and actions taken to correct them, and opportunities for public participation in decisions that may affect the quality of the water provided.

California Water Code

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Division 7 of the California Water Code) (Porter-Cologne Act). The Porter-Cologne Act grants the SWRCB and each of the Regional Water Quality Control Boards (RWQCBs) power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the Federal Clean Water Act. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and

other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a Water Quality Control Plan (Basin Plan) for its region. The regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

Senate Bill (SB) 610 and Assembly Bill (AB) 901

The State Legislature passed SB 610 and AB 901 in 2001. Both measures modified the Urban Water Management Planning Act.

SB 610 requires additional information in an urban water management plan if groundwater is identified as a source of water available to an urban water supplier. It also requires that the plan include a description of all water supply projects and programs that may be undertaken to meet total projected water use. SB 610 requires a city or county that determines a project is subject to CEQA to identify any public water system that may supply water to the project and to request identified public water systems to prepare a specified water supply assessment. The assessment must include, among other information, an identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and water received in prior years pursuant to these entitlements, rights, and contracts.

AB 901 requires an urban water management plan to include information, to the extent practicable, relating to the quality of existing sources of water available to an urban water supplier over given time periods. AB 901 also requires information on the manner in which water quality affects water management strategies and supply reliability. The bill requires a plan to describe plans to supplement a water source that may not be available at a consistent level of use, to the extent practicable. Additional findings and declarations relating to water quality are required.

Senate Bill (SB) 221

SB 221 adds Government Code Section 66455.3, requiring that the local water agency be sent a copy of any proposed residential subdivision of more than 500 dwelling units within five days of the subdivision application being accepted as complete for processing by the city or county. It also adds Government Code Section 66473.7, establishing detailed requirements for establishing whether a “sufficient water supply” exists to support any proposed residential subdivisions of more than 500 dwellings, including any such subdivision involving a development agreement. When approving a qualifying subdivision tentative map, the city or county must include a condition requiring availability of a sufficient water supply. The applicable public water system must provide proof of availability. If there is no public water system, the city or county must undertake the analysis described in Government Code Section 66473.7. The analysis must include consideration of effects on other users of water and groundwater.

Water Quality Control Plan for the Sacramento and San Joaquin River Basins

The Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan) includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The term "water quality standards," as used in the Federal Clean Water Act, includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain the water quality standards.

The RWQCB regulates waste discharges to minimize and control their effects on the quality of the region's ground and surface water. Permits are issued under a number of programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. The Basin Plan reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code and the Clean Water Act.

Urban Water Management Planning Act

The Urban Water Management Planning Act has as its objectives the management of urban water demands and the efficient use of urban water. Under its provisions, every urban water supplier is required to prepare and adopt an urban water management plan. An "urban water supplier" is a public or private water supplier that provides water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. The plan must identify and quantify the existing and planned sources of water available to the supplier, quantify the projected water use for a period of 20 years, and describe the supplier's water demand management measures. The urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The Department of Water Resources must receive a copy of an adopted urban water management plan.

LOCAL REGULATIONS

City of Brentwood Urban Water Management Plan (2010)

The purpose of the 2010 Urban Water Management Plan is to ensure efficient use of urban water supplies in the city of Brentwood and promote conservation. The UWMP discusses not only the availability of water but also water use, reclamation, and water conservation activities. The UWMP complies with the Urban Water Management Planning Act (UWMP Act) (California Water Code [CWC] Section 10610 et seq.), the Water Conservation Act of 2009 (CWC Section 10608), and the

20x2020 Water Conservation Plan, which are being implemented by the California Department of Water Resources (DWR).

City of Brentwood Water Master Plan (2006)

The City's 2006 Water Master Plan includes a summary of the City's system-wide water demands, the planning criteria used to determine water system demands, the City's water distribution system model, an analysis of the City's water system, and a summary of existing and future water system facilities.

Contra Costa Clean Water Program

To comply with the Federal Clean Water Act, Contra Costa County, its 19 incorporated cities and the Contra Costa County Flood Control & Water Conservation District have joined together to form the Contra Costa Clean Water Program (CCCWP). The CCCWP strives to eliminate stormwater pollution through public education, inspection and enforcement activities, and industrial outreach. The Contra Costa Clean Water Program is dedicated to maintaining a healthy environment in Contra Costa's creeks, rivers, the Delta, and the Bay.

East Contra Costa County Municipal NPDES Permit Waste Discharge Requirements Order R5-2010-0102 NPDES Permit No. CAS083313 23 September 2010

In response to the Federal Clean Water Act, the Contra Costa Clean Water Program regulates waste dischargers under a National Pollutant Discharge Elimination System (NPDES) Permit administered by the appropriate Regional Water Quality Control Board. Specifically, the municipalities are regulated with regard to their jurisdiction over and/or maintenance responsibility for municipal storm drain systems and watercourses that they own or operate. The NPDES Permit is concerned primarily with regulating trash, pollutants of concern, and excessive hydrologic runoff which can carry sediment and cause flooding.

Contra Costa Clean Water Program Stormwater Management Plan 1999-2004

This Stormwater Management Plan (SWMP) serves as the basis for the Contra Costa Clean Water Program's National Pollutant Discharge Elimination System (NPDES) Permit application to the Central Valley Regional Water Quality Control Board.

Start at the Source: Design Guidance Manual for Stormwater Quality Protection

This document is intended for use in the planning and design phases of residential, commercial, institutional, and industrial development and redevelopment. It recognizes that one of the best opportunities to reduce the generation of urban runoff or "nonpoint source pollution" from development is through planning and design. This document provides Best Management Practices including principles and techniques for basic siting and design considerations, construction phase strategies, and post construction property management practices.

3.9.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on the environment associated with hydrology and water quality if it will:

- Violate any water quality standards or waste discharge requirements;
- 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 preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted;
- 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 that would result in substantial erosion, siltation, run-off or flooding on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- 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;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Result in inundation by seiche, tsunami or mudflow.

IMPACTS AND MITIGATION

Impact 3.9-1: General Plan implementation could result in a violation of water quality standards or waste discharge requirements (Less than Significant)

Construction-Related Water Quality Impacts: Grading, excavation, removal of vegetation cover, and loading activities associated with future construction activities could temporarily increase runoff, erosion, and sedimentation. Construction activities also could result in soil compaction and wind erosion impacts that could adversely affect soils and reduce the revegetation potential at construction sites and staging areas.

As required by the Clean Water Act, each subsequent development project or improvement project will require an approved Storm Water Pollution Prevention Plan (SWPPP) that includes best management practices for grading and preservation of topsoil. A SWPPP is not required if the project will disturb less than one acre. SWPPPs are designed to control storm water quality degradation to the extent practicable using best management practices during and after construction.

Future development project applicants must submit the SWPPP with a Notice of Intent to the Regional Water Quality Control Board (RWQCB) to obtain a General Permit. The RWQCB is an agency responsible for reviewing the SWPPP with the Notice of Intent, prior to issuance of a General Permit for the discharge of storm water during construction activities. The RWQCB accepts General Permit applications (with the SWPPP and Notice of Intent) after specific projects have been approved by the lead agency. The lead agency for each specific project that is larger than one acre is required to obtain a General Permit for discharge of storm water during construction activities prior to commencing construction (per the Clean Water Act).

Based upon the wide scope of the General Plan, development of detailed, site-specific information on this impact is not feasible. However, each future project must include detailed project specific drainage plans that control storm water runoff and erosion, both during and after construction. The Regional Water Quality Control Board will require a project specific Storm Water Pollution Prevention Plan (SWPPP) to be prepared for each future project that disturbs an area one acre or larger. The SWPPPs will include project specific best management measures that are designed to control drainage and erosion.

New Development-Related Water Quality Impacts: New development under the proposed General Plan would introduce constituents into the storm water that are typically associated with urban runoff. These constituents include sediments, petroleum hydrocarbons, pesticides, fertilizers, and heavy metals such as lead, zinc, and copper. These pollutants tend to build up during the dry months of the year. Precipitation during the early portion of the wet season (generally from November to April) washes away most of these pollutants, resulting in high pollutant concentrations in the initial wet weather runoff. This initial runoff is referred to as the "first flush" of storm events. Subsequent periods of rain would result in less concentrated pollutant levels in the runoff.

The amount and type of runoff generated by the various future projects would be greater than under existing conditions, due to increases in impervious surfaces. There would be a corresponding increase in urban runoff pollutants and first flush roadway contaminants, as well as an increase in nutrients and other chemicals from landscaped areas. These constituents would result in water quality impacts to onsite and offsite drainage flows to area waterways.

Conclusion: The City of Brentwood has developed the General Plan to include policies and actions that, when implemented, will reduce water pollution from construction and new development, and protect and enhance natural storm drainage and water quality features. The policies and actions identified below include numerous requirements that would reduce the potential for General Plan implementation to result in increased water quality impacts. In addition, compliance

with the Clean Water Act and regulations enforced by the Regional Water Quality Control Board would ensure that construction-related impacts to water quality are minimized and future projects comply with all applicable laws and regulations. The implementation of the General Plan policies and actions listed below, combined with compliance with Federal and State regulations, would ensure that implementation of the General Plan would have a **less than significant** impact from these issues.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy IF 1-1: Provide adequate public infrastructure (i.e., street, sewer, water, and storm drain) to meet the needs of existing and future development.

Policy IF 3-1: Ensure adequate sewage conveyance and treatment infrastructure to meet existing and future development.

Policy IF 3-2: Maintain the existing wastewater system on a regular basis to increase the lifespan of the system and ensure public safety.

Policy IF 4-1: Maintain and improve Brentwood's storm drainage facilities.

Policy IF 4-3: Require all development projects to demonstrate how storm water runoff will be detained or retained on-site and/or conveyed to the nearest drainage facility as part of the development review process and as required by the City's NPDES Municipal Regional Permit. Project applicants shall mitigate any drainage impacts as necessary.

Policy IF 4-5: Continue to work cooperatively with outside agencies such as the Contra Costa County Flood Control & Water Conservation District regarding storm drainage issues.

Policy SA 2-2: Require all development projects to demonstrate how storm water runoff will be detained or retained on-site, treated, and/or conveyed to the nearest drainage facility as part of the development review process. Project applicants shall demonstrate that project implementation would not result in increases in the peak flow runoff to adjacent lands or drainage facilities that would exceed the design capacity of the drainage facility or result in an increased potential for off-site flooding.

Policy SA 2-8: Encourage and accommodate multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of Brentwood's streams, creeks, and wetland/riparian areas. Where appropriate and feasible, the City shall also encourage the use of flood and/or storm water retention facilities for use as groundwater recharge facilities.

Policy SA 2-10: Continue efforts to reduce flooding potential, by working with the Contra Costa County Flood Control & Water Conservation District in upgrading and expanding the storm drainage system.

Policy COS 4-1: Where feasible, protect and enhance surface water quality in creeks, streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat, and vernal pools through sound land use planning, community design, and site planning.

Policy COS 4-2: Rehabilitate existing channelized waterways, as feasible, to remove concrete linings and allow for a connection with the stream channel and the natural water table. Avoid creating additional channelized waterways, unless no other alternative is available to protect human health, safety, and welfare.

Policy COS 4-3: Where feasible, restore existing channelized waterways to a more natural condition. Restoration efforts should provide for naturalized hydraulic functioning. Restoration should also promote the growth of riparian vegetation to effectively stabilize banks, screen pollutants from runoff entering the channel, enhance fisheries, and provide other opportunities for natural habitat restoration.

Policy COS 4-4: Require discretionary projects, as well as new flood control and storm water conveyance projects, to integrate best management practices and natural features to the greatest extent feasible, while ensuring that these features adequately convey and control storm water to protect human health, safety, and welfare.

Policy COS 4-5: Encourage the use of natural features such as bio swales, vegetation, retention ponds, and other measures to remove storm water pollutants prior to discharge, subject to State regulations.

Policy COS 4-6: Where feasible, new development adjacent to creeks and streams should include opportunities for beneficial uses, such as flood control, ecological restoration, public access trails, and walkways.

Policy COS 4-7: Consult with State and Federal agencies during the development review process to help identify wetland and riparian habitat that has candidacy for restoration, conservation, and/or mitigation. Focus restoration and/or conservation efforts on areas that would maximize multiple beneficial uses for such habitat.

Policy COS 4-8: Conserve riparian habitat along local creeks, including but not limited to Marsh Creek, Deer Creek, Dry Creek, and Sand Creek, in order to maintain water quality and provide suitable habitat for native fish and plant species.

Policy COS 4-9: Consider the effects of development on ground and surface water quality, and implement measures to reduce water contamination.

Policy COS 4-10: Where feasible, encourage and support multipurpose detention basins that provide water quality protection, storm water detention, open space amenities, and recreational amenities.

ACTIONS

Action SA 2a: Develop a Flooding and Drainage Master Plan that addresses the following, at a minimum:

1. Storm water and drainage improvements for all areas of the city that are needed to accommodate existing and planned growth;

2. Standards for on and off-site storm water and flooding improvements to ensure no adverse impacts to adjacent or nearby properties;

3. Standard measures to be used by new development to address localized flooding impacts;

4. Identification of areas for stream channel or flood control conveyance system enlargement and/or stabilization;

5. Operation, maintenance, and funding of flood control and drainage facilities; and

6. Opportunities for multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of the city's streams, creeks, and wetland/riparian areas.

Action SA 2b: During the annual preparation of the Capital Improvement Program (CIP), review the conditions of bridges, culverts, and other flood control and storm water conveyance infrastructure, and include necessary improvements within the CIP to ensure safety of persons in the city and adequate conveyance of flood waters.

Action COS 1b: Adopt an ordinance that specifies standards and responsibilities for the maintenance of private open space lands within the city limits. The standards should include provisions for public access, habitat management, water quality protection, safety, and aesthetics.

Action COS 4a: Coordinate with interested public and private entities to create new and expanded public access trails along creeks and streams that connect to parks and open space areas within Brentwood's Planning Area.

Action COS 4b: Continue to identify which storm water and drainage facilities are in need of repair and address these needs through the City's Capital Improvement Program.

Action COS 4c: Utilize existing regulations and procedures, including but not limited to, the Zoning Ordinance and the environmental review process, in order to conserve wetlands and riparian habitat within the city limits and the Planning Area.

Action COS 4d: Coordinate with the California Department of Fish and Wildlife, Contra Costa County, and local watershed protection groups to identify potentially impacted aquatic habitat within Brentwood's Planning Area and to develop riparian management guidelines to be implemented by development, recreation, and other projects adjacent to creeks, streams, and other waterways.

Action COS 4e: Continue to implement, and periodically review/update as necessary, Chapter 15.52 (Grading, Erosion and Sediment Control) of the Brentwood Municipal Code. The City shall review projects to ensure that best management practices are implemented during construction and site grading activities, as well as in project design to reduce pollutant runoff into water bodies.

Action COS 4f: Explore revising Title 17 (Zoning) of the Brentwood Municipal Code to include standards for creek setbacks and the protection of riparian habitat along creek corridors. The standards should include minimum setback requirements, site design standards, and requirements for the ongoing maintenance of creek and riparian habitat on public and private lands.

Action COS 4g: Update the Creek Trails and Revegetation Master Plan. Solicit public input during the preparation of the update, and include outreach efforts to community organizations with knowledge of and interest in key issues associated with local creeks, trails, and habitat restoration.

Action COS 4h: Encourage volunteer-based programs that organize community creek restoration and/or clean-up events and provide public education regarding the benefits of city and regional water resources.

Action COS 4i: Provide a conservation page (or similar page) on the City's website that provides links to resource agencies (i.e., CDFW, USFWS, USACE, etc.) and provides information regarding local and regional conservation and environmental programs, to the extent that the City has readily available information.

Impact 3.9-2: General Plan implementation could result in the depletion of groundwater supplies or interfere substantially with groundwater recharge (Less than Significant)

Approximately 30% of the City's water comes from groundwater (City of Brentwood UWMP, 2010). The City has 9 permitted wells within its service area, 7 of which are active wells. The City's wells are located within the northwest part of the Tracy Subbasin of the San Joaquin Valley Groundwater Basin. The Tracy Subbasin has a total surface area of 539 square miles and is bounded by the Diablo Range of the Coast Range foothills on the west, the San Joaquin and Mokelumne Rivers on the north, the San Joaquin River to the east, and the San Joaquin-Stanislaus county line on the south. The Tracy Subbasin is comprised of continental deposits of Late Tertiary to Quaternary age. Deposits include the Tulare Formation, Older Alluvium, Flood Basin Deposits, and Younger Alluvium (California Department of Water Resources, 2006). The City's wells range in depth from 200 to 660 feet, and draw from the Tulare Formation, which consists of semi-consolidated, poorly sorted, discontinuous deposits of clay, silt, and gravel. The Corcoran clay occurs near the top of the formation and confines the underlying fresh water deposits formed by deposition from streams that originate in the Coast Range hills to the west.

A California Department of Water Resources review of hydrographs (plots of water levels over time) indicates that except for seasonal variation resulting from recharge and pumping, the majority of water levels in wells have remained relatively stable over at least the 10 year period prior to 2006. A groundwater budget, estimating the subbasin inflows and outflows, has not been prepared for the subbasin.

City wells have capacities ranging from 0.36 mgd (250 gpm) to 1.44 mgd (1,000 gpm). The total design capacity of the wells is 6.63 mgd. The firm design capacity of the wells, where firm capacity is the capacity of all the wells minus the capacity of the largest well, is 5.19 mgd. Annual production from the seven active wells averaged 4.13 mgd for the 2000 through 2010 period.

Table 3.9-2 summarizes annual pumped groundwater volumes from 2006 to 2010, and groundwater projected to be pumped from 2015 to 2035. Projected percentages of total water supply remain consistent with those in the recent past (i.e., 2009 and 2010). The percentage of groundwater supply versus total water supply has decreased over the recent years because of

increases in the use of surface water supplies from the City of Brentwood Water Treatment Plant and recycled water supplies from the Brentwood Wastewater Treatment Plant.

TABLE 3.9-2: GROUNDWATER (VOLUME PUMPED- MILLION GALLONS PER YEAR)

	2006	*2007*	*2008*	*2009*	*2010*	*2015*	*2020*	*2025*	*2030*	*2035*
Total Groundwater Pumped	1,886	1,331	1,474	1,235	1,152	1,234	1,229	1,351	1,423	1,492
Groundwater as a percent of total water supply	48%	30%	33%	29%	29%	30%	29%	29	28%	28%

SOURCE: CITY OF BRENTWOOD URBAN WATER MANAGEMENT PLAN (2010).

Water use varies seasonally, with maximum water use typically occurring during the months of June, July, August, and September, due to increased landscape irrigation. The City must be able to meet demand from all supply sources on the maximum demand day of the year, and also provide adequate water distribution system facilities to supply customers and maintain adequate pressure on the maximum demand day. The City projects a maximum demand of 41 mgd at buildout, a portion of which would be provided by a sustainable groundwater draw (City of Brentwood UWMP, 2010). The total groundwater draw would not result in a significant depletion of groundwater resources.

Subsequent development projects under the General Plan, such as residential, commercial, industrial, and roadway projects would result in new impervious surfaces and could reduce rainwater infiltration and groundwater recharge. Infiltration rates vary depending on the overlying soil types. In general, sandy soils have higher infiltration rates and can contribute to significant amounts of ground water recharge; clay soils tend to have lower percolation potentials; and impervious surfaces such as pavement significantly reduce infiltration capacity and increase surface water runoff. The amount of new pavement and the extent to which it affects infiltration depends on the site-specific soil type. Projects located in urban areas would have less of an impact than projects converting open lands and spaces. The City must evaluate individual projects as they are proposed to ensure that they would not result in a significant interference with recharge.

Implementation of the following General Plan policies and actions, combined with the City continuing to obtain surface water and reducing the consumption of groundwater, would ensure that the General Plan would have a **less than significant** impact relative to this topic.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

<u>Policy IF 2-1:</u> Ensure the water system and supply is adequate to meet the needs of existing and future development.

<u>Policy IF 2-2:</u> Ensure safe drinking water standards are met throughout the community.

<u>Policy IF 2-3:</u> Continue to implement a comprehensive water strategy that balances the need to supply water to all users served by the City with potable water use reduction measures.

Policy IF 2-4: Pursue additional water supply agreements to supplement the City's existing system.

Policy IF 2-5: Continue efforts to reduce potable water use and increase water conservation.

Policy IF 2-6: Use recycled water for landscaping irrigation within City roadways, parks, and facilities to the greatest extent feasible.

Policy SA 1-7: Prevent land subsidence and maintain adequate groundwater supplies.

Policy SA 2-8: Encourage and accommodate multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of Brentwood's streams, creeks, and wetland/riparian areas. Where appropriate and feasible, the City shall also encourage the use of flood and/or storm water retention facilities for use as groundwater recharge facilities.

ACTIONS

Action IF 2a: Routinely assess the City's ability to meet demand for potable water by periodically updating the Water Master Plan.

Action IF 2b: Explore additional permanent water sources through, and contract with, agencies that may have surplus water availability, such as the Contra Costa Water District, the East Bay Municipal Utility District, the East Contra Costa Irrigation District, and other potential sources.

Action IF 2c: Regularly review and update the City's water conservation strategy to be consistent with current best management practices for water conservation, considering measures recommended by the State Department of Water Resources, the California Urban Water Conservation Council, and the Contra Costa Water District.

Action SA 1k: Monitor withdrawal of groundwater, oil, and gas, maintain land elevation records, and regulate overdraft to prevent subsidence.

Impact 3.9-3: General Plan implementation could alter the existing drainage pattern in a manner which would result in substantial erosion, siltation, flooding, or polluted runoff (Less than Significant)

Individual future projects developed after adoption of the General Plan would create new impervious surfaces. This would result in an incremental reduction in the amount of natural soil surfaces available for infiltration of rainfall and runoff, potentially generating additional runoff during storm events. In addition, the increase in impervious surfaces, along with the increase in surface water runoff, could increase the non-point source discharge of pollutants. Anticipated runoff contaminants include sediment, pesticides, oil and grease, nutrients, metals, bacteria, and trash. Contributions of these contaminants to stormwater and non-stormwater runoff would degrade the quality of receiving waters. During the dry season, vehicles and other urban activities release contaminants onto the impervious surfaces, where they can accumulate until the first storm event. During this initial storm event, or first flush, the concentrated pollutants would be transported via runoff to stormwater drainage systems. Contaminated runoff waters could flow

into the stormwater drainage systems that discharge into rivers, agricultural ditches, sloughs, and channels, and ultimately could degrade the water quality of any of these water bodies.

Additionally, individual future projects developed after adoption of the General Plan could potentially alter surface drainage patterns as a result of directly altering flow patterns, or placing structures in a floodway, all of which could yield increased amounts of stormwater runoff. The construction activities associated with future projects, such as commercial, residential, and industrial developments, as well as road widenings and other infrastructure projects that convert permeable surfaces or install permanent structures, would require stormwater drainage management measures to avoid flooding impacts. The existing storm drainage network in Brentwood may not have sufficient capacity to convey the additional runoff from individual future projects. If the storm drainage network is not appropriately designed it could be overwhelmed during a large storm event and result in flooding.

Based upon the wide scope of the General Plan, development of detailed, site-specific information on this impact is not feasible. As previously discussed, a future project applicant would be required to obtain permits from the Army Corps of Engineers and the Department of Fish and Wildlife if any work is performed within a waterway. Each future development project must also include detailed project specific floodplain and drainage studies that assess the drainage characteristics and flood risks so that an appropriate storm drainage plan can be prepared to control storm water runoff, both during and after construction. The drainage plan will ultimately include project specific best management measures that are designed to allow for natural recharge and infiltration of stormwater. Construction of storm drainage improvements would occur as part of an overall development project and is considered in the environmental impacts associated with project construction and implementation as addressed throughout this EIR.

The City of Brentwood has developed the General Plan to include policies and actions that, when implemented, will reduce flooding from new development, reduce storm water pollution from new development, and protect and enhance natural storm drainage and water quality features, which will in turn reduce water quality impacts. The policies and actions identified below include numerous requirements that would reduce the potential for General Plan implementation to result in increased flooding or result in water quality impacts associated with increased runoff, siltation, or erosion. The implementation of these policies and actions would ensure that implementation of the General Plan would have a **less than significant** impact related to these issues.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy IF 1-1: Provide adequate public infrastructure (i.e., street, sewer, water, and storm drain) to meet the needs of existing and future development.

Policy IF 1-2: Require development, infrastructure, and long-term planning projects to be consistent with all applicable City infrastructure plans, including the Water Master Plan, the Wastewater Master Plan, and the Capital Improvement Program.

Policy IF 1-3: Require all development projects to mitigate their infrastructure service impacts or demonstrate that the City's infrastructure, public services, and utilities can accommodate the increased demand for services, and that service levels for existing users will not be degraded or impaired.

Policy IF 1-4: Require new development projects to develop comprehensive infrastructure plans for City review and approval as part of an application submittal.

Policy IF 1-5: When appropriate, require development projects to install off-site infrastructure subject to the City's Development Fee Program.

Policy IF 1-6: Prioritize infrastructure improvements to areas identified for economic growth in the next 5-10 years.

Policy IF 1-7: Require the payment of impact fees for all new development.

Policy IF 4-1: Maintain and improve Brentwood's storm drainage facilities.

Policy IF 4-2: Incorporate recreational trails and parkway vegetation design in channel improvements, and explore utilizing detention basins for parks, ball fields, and equestrian areas.

Policy IF 4-3: Require all development projects to demonstrate how storm water runoff will be detained or retained on-site and/or conveyed to the nearest drainage facility as part of the development review process and as required by the City's NPDES Municipal Regional Permit. Project applicants shall mitigate any drainage impacts as necessary.

Policy IF 4-4: Maintain drainage channels in a naturalized condition to the greatest extent feasible, subject to health and safety requirements and as otherwise described in the Conservation and Open Space Element of the General Plan.

Policy IF 4-5: Continue to work cooperatively with outside agencies such as the Contra Costa County Flood Control & Water Conservation District regarding storm drainage issues.

Policy SA 2-1: Support and participate in planning efforts undertaken at the regional, State, and Federal levels to improve flood management facilities throughout Contra Costa County.

Policy SA 2-2: Require all development projects to demonstrate how storm water runoff will be detained or retained on-site, treated, and/or conveyed to the nearest drainage facility as part of the development review process. Project applicants shall demonstrate that project implementation would not result in increases in the peak flow runoff to adjacent lands or drainage facilities that would exceed the design capacity of the drainage facility or result in an increased potential for off-site flooding.

Policy SA 2-3: Ensure that construction activities will not result in adverse impacts to existing flood control and drainage structures.

Policy SA 2-4: For properties located within a flood hazard zone, as identified on the most recent FEMA floodplain map or identified by the California Department of Water Resources, the City shall not enter into a development agreement, approve any discretionary entitlement, tentative parcel map, parcel map, final map, or any ministerial permit that would result in the construction of a new

residence unless flood protection findings consistent with the requirements of California Government Code Sections 65865.5, 65962, 66474.5 can be made and documented.

Policy SA 2-5: All new development within an identified floodplain shall be built according to Federal Emergency Management Agency standards.

Policy SA 2-6: Unless otherwise mitigated, require new structures to be located outside of the 100-year floodplain to the greatest extent feasible.

Policy SA 2-7: Monitor ongoing efforts by Federal and State agencies to update flood hazard maps within Brentwood and Contra Costa County.

Policy SA 2-8: Encourage and accommodate multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of Brentwood's streams, creeks, and wetland/riparian areas. Where appropriate and feasible, the City shall also encourage the use of flood and/or storm water retention facilities for use as groundwater recharge facilities.

Policy SA 2-9: Encourage flood control measures that respect natural drainage features, vegetation, and natural waterways, while still providing for adequate flood control and protection.

Policy SA 2-10: Continue efforts to reduce flooding potential, by working with the Contra Costa County Flood Control & Water Conservation District in upgrading and expanding the storm drainage system.

Policy SA 2-11: Ensure that new development or governmental action does not compound the potential for flooding.

Policy SA 2-12: Ensure that adequate drainage and erosion control measures are provided during construction of all new development.

ACTIONS

Action IF 1a: Periodically review and update the various City master plans for the provision and/or extension of public services to serve existing and future development. These plans include, but are not limited to, the Water Master Plan, the Wastewater Master Plan, and the Capital Improvement Program.

Action IF 1b: Develop and regularly update a comprehensive plan which establishes priorities and corrects existing inadequacies in the City's infrastructure system.

Action IF 1c: As part of the development review process, determine the potential impacts of development and infrastructure projects on public infrastructure, and ensure that new development contributes its fair share toward necessary on and off-site infrastructure, as described in the Growth Management Element of the General Plan.

Action IF 1d: Through development review, ensure that infrastructure is adequately sized to accommodate the proposed development and, if applicable, allow for extensions to future developments.

Action IF 1e: Identify and apply for Federal, State, and regional funding sources set aside to finance infrastructure costs.

Action IF 1f: Develop and regularly update a comprehensive financing plan to accommodate the construction of master planned infrastructure.

Action IF 1g: Periodically update the City's website to ensure that the public has access to current and accurate information regarding infrastructure services provided by the City.

Action SA 2a: Develop a Flooding and Drainage Master Plan that addresses the following, at a minimum:

> *1. Storm water and drainage improvements for all areas of the city that are needed to accommodate existing and planned growth;*
>
> *2. Standards for on and off-site storm water and flooding improvements to ensure no adverse impacts to adjacent or nearby properties;*
>
> *3. Standard measures to be used by new development to address localized flooding impacts;*
>
> *4. Identification of areas for stream channel or flood control conveyance system enlargement and/or stabilization;*
>
> *5. Operation, maintenance, and funding of flood control and drainage facilities; and*
>
> *6. Opportunities for multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of the city's streams, creeks, and wetland/riparian areas.*

Action SA 2b: During the annual preparation of the Capital Improvement Program (CIP), review the conditions of bridges, culverts, and other flood control and storm water conveyance infrastructure, and include necessary improvements within the CIP to ensure safety of persons in the city and adequate conveyance of flood waters.

Action SA 2c: Seek State and Federal funding for flood control and drainage infrastructure improvements.

Action SA 2d: Review the Brentwood Municipal Code, including Chapter 15.07 (Floodplain Management), and revise as necessary to ensure that development standards are consistent with the requirements of State law, including Government Code Section 65007. Development and building standards shall require the following:

> *1. New structures proposed for location within the 100-year floodplain shall be elevated one (1) foot or more above the 100-year flood elevation.*
>
> *2. New construction in the 100-year floodplain shall be designed and constructed so that it does not contribute to cumulative flooding problems that could pose a hazard to surrounding property owners or the public.*

3. Discourage extensive areas of impermeable surfaces within the 100-year floodplain and promote the use of permeable materials for surfaces such as driveways and parking lots.

4. Ensure that new development within the 100-year floodplain includes all-weather access roads or other measures to ensure adequate access during a flood event.

Action SA 2e: Maintain unimproved drainage channels on a periodic basis.

Action SA 2f: As part of the development review process, require developers to prepare hydrological studies as necessary. Studies shall encompass the project site as well as the entire drainage area.

Impact 3.9-4 General Plan implementation could otherwise substantially degrade water quality (Less than Significant)

Water Quality Impacts from Discharges to 303(d) Listed Water Bodies: Section 303(d) of the Federal Clean Water Act requires states to identify waters that do not meet water quality standards or objectives and, thus, are considered "impaired." Once listed, Section 303(d) mandates prioritization and development of a Total Maximum Daily Load (TMDL). The TMDL is a tool that establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby the basis for the States to establish water quality-based controls. The purpose of TMDLs is to ensure that beneficial uses are restored and that water quality objectives are achieved.

The Planning Area has three water bodies listed on the 2010 Section 303(d) list of impaired water bodies. Marsh Creek (Dunn Creek to Marsh Creek Reservoir), Marsh Creek (Marsh Creek Reservoir to San Joaquin River), and Marsh Creek Reservoir are listed as Category 5 segments, which means they are a water segment where standards are not met and a TMDL is required, but not yet completed, for at least one of the pollutants being listed for this segment.

- Marsh Creek (Dunn Creek to Marsh Creek Reservoir): The pollutants listed for this segment include: mercury and metals. The estimated size of the area affected is 11 miles. The TMDL is estimated to be completed by 2015.
- Marsh Creek (Marsh Creek Reservoir to San Joaquin River): The pollutants listed for this segment include: diazinon (pesticide), *Escherichia coli* (pathogen), mercury, sediment toxicity, and unknown toxicity. The estimated size of the area affected is 10 miles. The TMDL is estimated to be completed between 2015 and 2021 for each pollutant.
- Marsh Creek Reservoir: The pollutant listed for this segment includes mercury. The estimated size of the area affected is 278 acres. The TMDL is estimated to be completed by 2015.

The County of Contra Costa, CCCFCWCD, and the Cities of Antioch, Brentwood, and Oakley are member agencies of the Contra Costa Clean Water Program (CCCWP). The CCCWP was created in 1993 and also includes 18 other incorporated cities. The purpose of the CCCWP is to manage and protect the water quality of the stormwater runoff and creeks in Contra Costa County and in the

member cities. The Central Valley Regional Water Quality Control Board issued National Pollution Discharge Elimination System (NPDES) Waste Discharge Requirements (Order R5-2010-0102, NPDES Permit No. CAS083313) to the CCCWP on September 23, 2010.

This Order requires implementation of Best Management Practices (BMPs) to reduce the level of pollutants in the stormwater to the maximum extent practicable. Some of the more important requirements are summarized below. The members of the CCCWP are called permittees in the discussion below:

- The Permittees shall, within their respective jurisdictions, effectively prohibit the discharge of non-stormwater into storm drain systems and watercourses. It shall be prohibited to discharge rubbish, refuse, bark, sawdust, or other solid wastes into surface waters.

- Permittees shall use their planning authorities to 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. This 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, evapotranspiring, and/or biotreating the stormwater runoff close to its source. LID employs principles such as preserving and recreating natural landscape features and minimizing imperviousness to create functional and appealing site drainage that treats stormwater as a resource, rather than a waste product. Practices used to adhere to these LID principles include measures such as rain barrels and cisterns, green roofs, permeable pavement, preserving undeveloped open space, and biotreatment through rain gardens, bioretention units, bioswales, and planter/tree boxes.

- Each Permittee shall implement an industrial and commercial site control program at all sites which could reasonably be considered to cause or contribute to pollution of stormwater runoff, with inspections and effective follow-up and enforcement to abate actual or potential pollution sources.

- Permittees shall develop and implement an illicit discharge program that includes an active surveillance component and a centralized complaint collection and follow-up component to prevent illicit discharge into stormwater. Permittees shall maintain a complaint tracking and follow-up data system.

- Each Permittee shall implement a construction site inspection and control program at all construction sites.

- Through outreach programs, each Permittee shall increase the knowledge of residents regarding the impacts of stormwater pollution on receiving water and potential solutions to mitigate the problems change, the waste disposal and runoff pollution generation behavior of residents by encouraging implementation of appropriate solutions, and involve various citizens in mitigating the impacts of stormwater pollution.

- Prevent the impairment of urban streams by pesticide-related toxicity.

- Reduce trash loads from municipal stormwater systems by 40% by 2015, 70% by 2018, and 100% by 2023.
- Implement a Total Mercury and Methylmercury control program.

Based upon the wide scope of the General Plan, development of detailed, site-specific information on this impact is not feasible. However, each future development project is required to prepare a detailed project specific drainage plan and a Storm Water Pollution Prevention Plan (SWPPP) that will control storm water runoff and erosion, both during and after construction. If the project involves the discharge of dewatering into surface waters the project proponent will need to acquire a Dewatering permit, NPDES permit, and Waste Discharge permit from the RWQCB.

The City of Brentwood has developed the General Plan to include policies and actions that, when implemented, will reduce storm water pollution from new development and protect and enhance natural storm drainage and water quality features. The policies and actions identified below include numerous requirements that would reduce the potential for General Plan implementation to result in increased water quality impacts. The implementation of these policies and actions would ensure that implementation of the General Plan would have a **less than significant** impact related to these issues.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy IF 1-1: Provide adequate public infrastructure (i.e., street, sewer, water, and storm drain) to meet the needs of existing and future development.

Policy IF 3-1: Ensure adequate sewage conveyance and treatment infrastructure to meet existing and future development.

Policy IF 3-2: Maintain the existing wastewater system on a regular basis to increase the lifespan of the system and ensure public safety.

Policy IF 4-1: Maintain and improve Brentwood's storm drainage facilities.

Policy IF 4-3: Require all development projects to demonstrate how storm water runoff will be detained or retained on-site and/or conveyed to the nearest drainage facility as part of the development review process and as required by the City's NPDES Municipal Regional Permit. Project applicants shall mitigate any drainage impacts as necessary.

Policy IF 4-5: Continue to work cooperatively with outside agencies such as the Contra Costa County Flood Control & Water Conservation District regarding storm drainage issues.

Policy SA 2-2: Require all development projects to demonstrate how storm water runoff will be detained or retained on-site, treated, and/or conveyed to the nearest drainage facility as part of the development review process. Project applicants shall demonstrate that project implementation would not result in increases in the peak flow runoff to adjacent lands or drainage facilities that would exceed the design capacity of the drainage facility or result in an increased potential for off-site flooding.

Policy SA 2-8: Encourage and accommodate multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of Brentwood's streams, creeks, and wetland/riparian areas. Where appropriate and feasible, the City shall also encourage the use of flood and/or storm water retention facilities for use as groundwater recharge facilities.

Policy SA 2-10: Continue efforts to reduce flooding potential, by working with the Contra Costa County Flood Control & Water Conservation District in upgrading and expanding the storm drainage system.

Policy COS 4-1: Where feasible, protect and enhance surface water quality in creeks, streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat, and vernal pools through sound land use planning, community design, and site planning.

Policy COS 4-2: Rehabilitate existing channelized waterways, as feasible, to remove concrete linings and allow for a connection with the stream channel and the natural water table. Avoid creating additional channelized waterways, unless no other alternative is available to protect human health, safety, and welfare.

Policy COS 4-3: Where feasible, restore existing channelized waterways to a more natural condition. Restoration efforts should provide for naturalized hydraulic functioning. Restoration should also promote the growth of riparian vegetation to effectively stabilize banks, screen pollutants from runoff entering the channel, enhance fisheries, and provide other opportunities for natural habitat restoration.

Policy COS 4-4: Require discretionary projects, as well as new flood control and storm water conveyance projects, to integrate best management practices and natural features to the greatest extent feasible, while ensuring that these features adequately convey and control storm water to protect human health, safety, and welfare.

Policy COS 4-5: Encourage the use of natural features such as bio swales, vegetation, retention ponds, and other measures to remove storm water pollutants prior to discharge, subject to State regulations.

Policy COS 4-6: Where feasible, new development adjacent to creeks and streams should include opportunities for beneficial uses, such as flood control, ecological restoration, public access trails, and walkways.

Policy COS 4-7: Consult with State and Federal agencies during the development review process to help identify wetland and riparian habitat that has candidacy for restoration, conservation, and/or mitigation. Focus restoration and/or conservation efforts on areas that would maximize multiple beneficial uses for such habitat.

Policy COS 4-8: Conserve riparian habitat along local creeks, including but not limited to Marsh Creek, Deer Creek, Dry Creek, and Sand Creek, in order to maintain water quality and provide suitable habitat for native fish and plant species.

Policy COS 4-9: Consider the effects of development on ground and surface water quality, and implement measures to reduce water contamination.

Policy COS 4-10: Where feasible, encourage and support multipurpose detention basins that provide water quality protection, storm water detention, open space amenities, and recreational amenities.

ACTIONS

Action SA 2a: Develop a Flooding and Drainage Master Plan that addresses the following, at a minimum:

1. Storm water and drainage improvements for all areas of the city that are needed to accommodate existing and planned growth;

2. Standards for on and off-site storm water and flooding improvements to ensure no adverse impacts to adjacent or nearby properties;

3. Standard measures to be used by new development to address localized flooding impacts;

4. Identification of areas for stream channel or flood control conveyance system enlargement and/or stabilization;

5. Operation, maintenance, and funding of flood control and drainage facilities; and

6. Opportunities for multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of the city's streams, creeks, and wetland/riparian areas.

Action SA 2b: During the annual preparation of the Capital Improvement Program (CIP), review the conditions of bridges, culverts, and other flood control and storm water conveyance infrastructure, and include necessary improvements within the CIP to ensure safety of persons in the city and adequate conveyance of flood waters.

Action COS 1b: Adopt an ordinance that specifies standards and responsibilities for the maintenance of private open space lands within the city limits. The standards should include provisions for public access, habitat management, water quality protection, safety, and aesthetics.

Action COS 4b: Continue to identify which storm water and drainage facilities are in need of repair and address these needs through the City's Capital Improvement Program.

Action COS 4c: Utilize existing regulations and procedures, including but not limited to, the Zoning Ordinance and the environmental review process, in order to conserve wetlands and riparian habitat within the city limits and the Planning Area.

Action COS 4d: Coordinate with the California Department of Fish and Wildlife, Contra Costa County, and local watershed protection groups to identify potentially impacted aquatic habitat within Brentwood's Planning Area and to develop riparian management guidelines to be implemented by development, recreation, and other projects adjacent to creeks, streams, and other waterways.

Action COS 4e: Continue to implement, and periodically review/update as necessary, Chapter 15.52 (Grading, Erosion and Sediment Control) of the Brentwood Municipal Code. The City shall review projects to ensure that best management practices are implemented during construction and site grading activities, as well as in project design to reduce pollutant runoff into water bodies.

Action COS 4f: Explore revising Title 17 (Zoning) of the Brentwood Municipal Code to include standards for creek setbacks and the protection of riparian habitat along creek corridors. The standards should include minimum setback requirements, site design standards, and requirements for the ongoing maintenance of creek and riparian habitat on public and private lands.

Action COS 4g: Update the Creek Trails and Revegetation Master Plan. Solicit public input during the preparation of the update, and include outreach efforts to community organizations with knowledge of and interest in key issues associated with local creeks, trails, and habitat restoration.

Action COS 4h: Encourage volunteer-based programs that organize community creek restoration and/or clean-up events and provide public education regarding the benefits of city and regional water resources.

Action COS 4i: Provide a conservation page (or similar page) on the City's website that provides links to resource agencies (i.e., CDFW, USFWS, USACE, etc.) and provides information regarding local and regional conservation and environmental programs, to the extent that the City has readily available information.

Impact 3.9-5 General Plan implementation could place housing and structures 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 (Less than Significant)

The Planning Area is subject to flooding problems along the natural creeks and drainages that traverse the area. Marsh Creek, Dry Creek, Deer Creek, and Sand Creek are the most prominent drainages in the Planning Area that are subject to flooding. The 100-year flood plain is largely confined to the drainage channels along these creeks, except along Marsh Creek starting near Dainty Avenue and extending northeast through the city to the city limits. In this area, the 100-year and 500-year flood plain extends onto properties that are located immediately adjacent to this drainage. The flood hazards in Brentwood are illustrated in Figure 3.9-4.

The General Plan Safety Element includes numerous policies specifically designed to address flood hazards. Policy SA 2-1 requires the City to support and participate in planning efforts undertaken at the regional, State, and Federal levels to improve flood management facilities throughout Contra Costa county. Policy SA 2-2 requires all development projects to demonstrate how storm water runoff will be detained or retained on-site, treated, and/or conveyed to the nearest drainage facility as part of the development review process. Project applicants must demonstrate that project implementation would not result in increases in the peak flow runoff to adjacent lands or drainage facilities that would exceed the design capacity of the drainage facility or result in an increased potential for off-site flooding. Policy SA 2-3 ensures that construction activities will not result in adverse impacts to existing flood control and drainage structures. Policy SA 2-4 requires the City to not enter into a development agreement, approve any discretionary entitlement,

tentative parcel map, parcel map, final map, or any ministerial permit that would result in the construction of a new residence in a flood hazard zone unless flood protection findings consistent with the requirements of California Government Code Sections 65865.5, 65962, and 66474.5 can be made and documented. Policy SA 2-5 requires all new development within an identified floodplain to be built according to Federal Emergency Management Agency standards. Policy SA 2-6 requires new structures to be located outside of the 100-year floodplain to the greatest extent feasible unless mitigated otherwise. Policy SA 2-7 requires the City to monitor ongoing efforts by Federal and State agencies to update flood hazard maps within Brentwood and Contra Costa county. Policy SA 2-8 requires the City to encourage and accommodate multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of Brentwood's streams, creeks, and wetland/riparian areas. Where appropriate and feasible, the City is directed to encourage the use of flood and/or storm water retention facilities for use as groundwater recharge facilities. Policy SA 2-9 requires the City to encourage flood control measures that respect natural drainage features, vegetation, and natural waterways, while still providing for adequate flood control and protection. Policy SA 2-10 requires the City to continue efforts to reduce flooding potential, by working with the Contra Costa County Flood Control and Water Conservation District in upgrading and expanding the storm drainage system. Policy SA 2-11 ensures that new development or governmental action does not compound the potential for flooding. Policy SA 2-12 ensures that adequate drainage and erosion control measures are provided during construction of all new development.

Subsequent development, infrastructure, and planning projects would be subject to the General Plan policies, as well as the numerous actions presented with the policies. The policies and actions contained in the Safety Element of the General Plan represent a comprehensive and holistic approach by the City of Brentwood to reduce the risks of flooding to city residents and properties. Furthermore, as described in the setting section, numerous Federal, State, and local agencies are responsible for maintaining flood protection features in the city of Brentwood, including the U.S. Army Corps of Engineers (USACE), Department of Water Resources (DWR), and Department of Fish and Wildlife (CDFW) at the Federal and State level. The implementation of the General Plan would result in a **less than significant** impact relative to this topic.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy SA 2-1: Support and participate in planning efforts undertaken at the regional, State, and Federal levels to improve flood management facilities throughout Contra Costa County.

Policy SA 2-2: Require all development projects to demonstrate how storm water runoff will be detained or retained on-site, treated, and/or conveyed to the nearest drainage facility as part of the development review process. Project applicants shall demonstrate that project implementation would not result in increases in the peak flow runoff to adjacent lands or drainage facilities that would exceed the design capacity of the drainage facility or result in an increased potential for off-site flooding.

Policy SA 2-3: Ensure that construction activities will not result in adverse impacts to existing flood control and drainage structures.

Policy SA 2-4: For properties located within a flood hazard zone, as identified on the most recent FEMA floodplain map or identified by the California Department of Water Resources, the City shall not enter into a development agreement, approve any discretionary entitlement, tentative parcel map, parcel map, final map, or any ministerial permit that would result in the construction of a new residence unless flood protection findings consistent with the requirements of California Government Code Sections 65865.5, 65962, 66474.5 can be made and documented.

Policy SA 2-5: All new development within an identified floodplain shall be built according to Federal Emergency Management Agency standards.

Policy SA 2-6: Unless otherwise mitigated, require new structures to be located outside of the 100-year floodplain to the greatest extent feasible.

Policy SA 2-7: Monitor ongoing efforts by Federal and State agencies to update flood hazard maps within Brentwood and Contra Costa County.

Policy SA 2-8: Encourage and accommodate multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of Brentwood's streams, creeks, and wetland/riparian areas. Where appropriate and feasible, the City shall also encourage the use of flood and/or storm water retention facilities for use as groundwater recharge facilities.

Policy SA 2-9: Encourage flood control measures that respect natural drainage features, vegetation, and natural waterways, while still providing for adequate flood control and protection.

Policy SA 2-10: Continue efforts to reduce flooding potential, by working with the Contra Costa County Flood Control & Water Conservation District in upgrading and expanding the storm drainage system.

Policy SA 2-11: Ensure that new development or governmental action does not compound the potential for flooding.

Policy SA 2-12: Ensure that adequate drainage and erosion control measures are provided during construction of all new development.

ACTIONS

Action SA 2a: Develop a Flooding and Drainage Master Plan that addresses the following, at a minimum:

> *1. Storm water and drainage improvements for all areas of the city that are needed to accommodate existing and planned growth;*
>
> *2. Standards for on and off-site storm water and flooding improvements to ensure no adverse impacts to adjacent or nearby properties;*
>
> *3. Standard measures to be used by new development to address localized flooding impacts;*
>
> *4. Identification of areas for stream channel or flood control conveyance system enlargement and/or stabilization;*

5. Operation, maintenance, and funding of flood control and drainage facilities; and

6. Opportunities for multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of the city's streams, creeks, and wetland/riparian areas.

Action SA 2b: During the annual preparation of the Capital Improvement Program (CIP), review the conditions of bridges, culverts, and other flood control and storm water conveyance infrastructure, and include necessary improvements within the CIP to ensure safety of persons in the city and adequate conveyance of flood waters.

Action SA 2c: Seek State and Federal funding for flood control and drainage infrastructure improvements.

Action SA 2d: Review the Brentwood Municipal Code, including Chapter 15.07 (Floodplain Management), and revise as necessary to ensure that development standards are consistent with the requirements of State law, including Government Code Section 65007. Development and building standards shall require the following:

1. New structures proposed for location within the 100-year floodplain shall be elevated one (1) foot or more above the 100-year flood elevation.

2. New construction in the 100-year floodplain shall be designed and constructed so that it does not contribute to cumulative flooding problems that could pose a hazard to surrounding property owners or the public.

3. Discourage extensive areas of impermeable surfaces within the 100-year floodplain and promote the use of permeable materials for surfaces such as driveways and parking lots.

4. Ensure that new development within the 100-year floodplain includes all-weather access roads or other measures to ensure adequate access during a flood event.

Action SA 2e: Maintain unimproved drainage channels on a periodic basis.

Action SA 2f: As part of the development review process, require developers to prepare hydrological studies as necessary. Studies shall encompass the project site as well as the entire drainage area.

Impact 3.9-6: General Plan implementation would not expose people or structures to a significant risk of loss, injury, or death involving flooding as a result of failure of a levee or dam, seiche, tsunami, or mudflow (Less than Significant)

Tsunami: A tsunami is a sea wave caused by a submarine earthquake, landslide, or volcanic eruption. Tsunami can cause catastrophic damage to shallow or exposed shorelines. The Planning Area is sufficiently distant from the San Francisco Bay to preclude effects from a tsunami. This is a **less than significant** impact.

Seiches: Seiches are changes or oscillations of water levels within a confined water body. Seiches are caused by fluctuation in the atmosphere, tidal currents, or earthquakes. The effect of this phenomenon is a standing wave that would occur when influenced by external causes. The Planning Area is not located proximate to a confined water body that would pose a significant risk from a seiche. This is a **less than significant** impact.

Mudflow: A mudflow is a type of mass wasting or landslide, where earth and surface materials are rapidly transported downhill under the force of gravity. Mudflow events are caused by a combination of factors, including soil type, soil profile, precipitation, and slope. Mudflow may be triggered by heavy rainfall that the soil is not able to sufficiently drain or absorb. As a result of this super-saturation, soil and rock materials become unstable and eventually slide away from their existing location. Soils most susceptible to mudflow are saturated, loose, non-plastic, uniformly graded, and fine-grained sand deposits. Given the relatively level slopes throughout Brentwood, the mudflow potential is very low. This is not a significant constraint in the Planning Area. The mudflow potential increases in the foothills and mountains to the west of the Planning Area. This is a **less than significant** impact.

Dams: Earthquakes centered close to a dam are typically the most likely cause of dam failure. Dam Inundation maps have been required in California since 1972, following the 1971 San Fernando Earthquake and near failure of the Lower Van Norman Dam. The Planning Area has four dams that are identified by the Division of Safety of Dams as Major Dams; the Los Vaqueros Dam, Marsh Creek Dam, Deer Creek Dam, and Dry Creek Dam. Each dam is briefly described below:

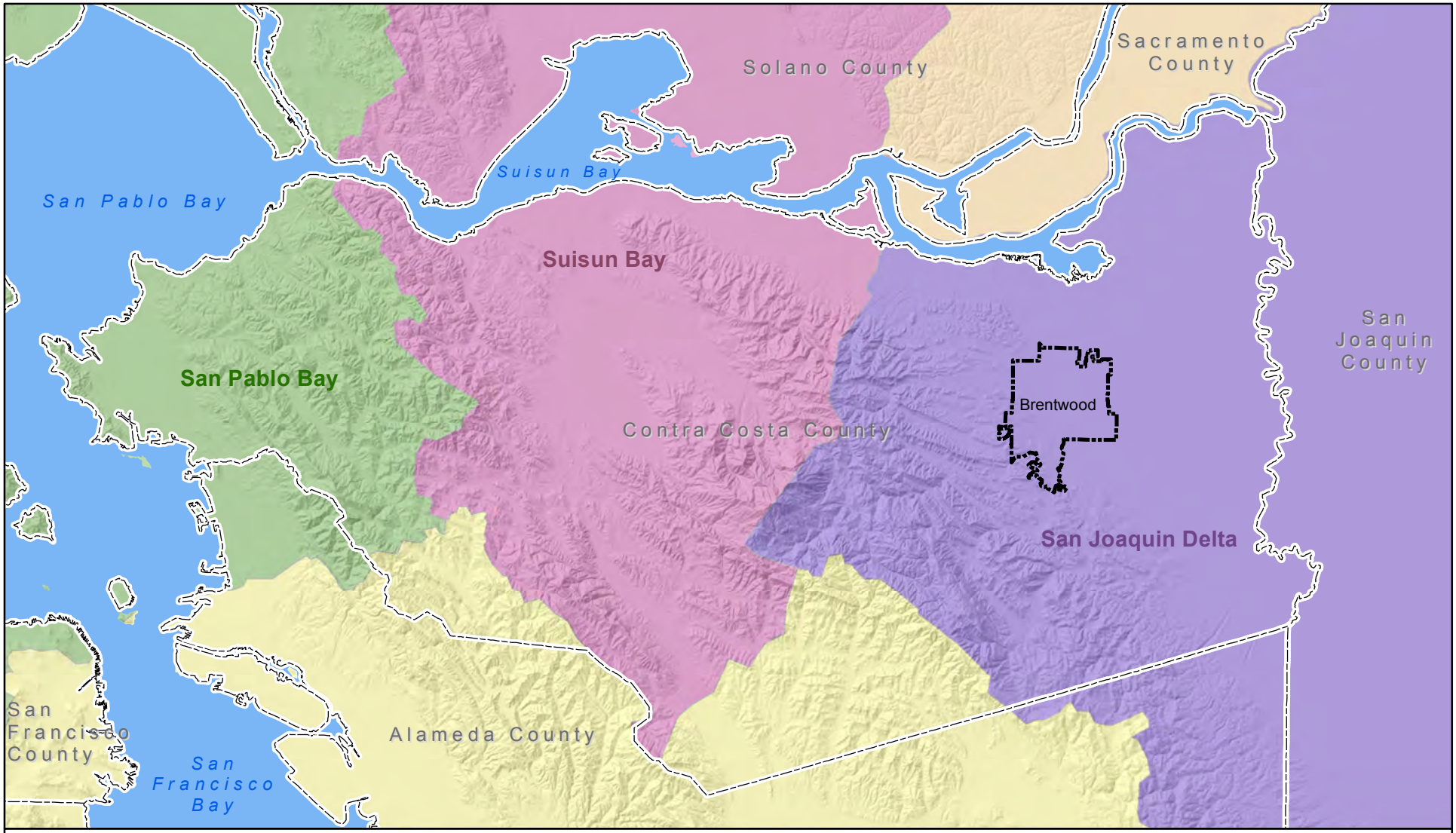
- The Los Vaqueros Dam, owned and operated by the Contra Costa Water District, is an earthen dam located on Kellogg Creek. This dam was built in 1997 and raised in 2012 to a height of 226 feet with a reservoir capacity of 160,000 acre-feet.
- The Marsh Creek Dam, owned and operated by the Contra Costa County Flood Control and Water Conservation District, is an earthen dam located on Marsh Creek. This dam was built in 1963 at a height of 59 feet with a reservoir capacity of 4,425 acre-feet.
- The Deer Creek Dam, owned and operated by the Contra Costa County Flood Control and Water Conservation District, is an earthen dam located on Deer Creek. This dam was built in 1963 at a height of 28 feet with a reservoir capacity of 233 acre-feet.
- The Dry Creek Dam, owned and operated by the Contra Costa County Flood Control and Water Conservation District, is an earthen dam located on Dry Creek. This dam was built in 1963 at a height of 30 feet with a reservoir capacity of 300 acre-feet.

These four dams do not have a history of dam failure; however, these dams are identified as having the potential to inundate habitable portions of the Planning Area in the unlikely event of dam failure. The dam owners/operators, Contra Costa Water District and Contra Costa County Flood Control and Water Conservation District, are responsible for the management, monitoring, and improvements to these dams to reduce the risk of dam failure and inundation. The General Plan includes an action that requires the City to maintain an inventory of all natural hazards, including dam failure inundation areas. The implementation of the General Plan would result in a **less than significant** impact relative to this topic.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

ACTIONS

Action SA 1m: Maintain an inventory of all natural hazards, including active faults, Alquist-Priolo Special Study Zones, floodplains, and projected dam failure inundation areas.



Cataloging Code (HUC-8)

- Lower Sacramento
- San Francisco Bay
- San Joaquin Delta
- San Pablo Bay
- Suisun Bay

0 2.5 5
Miles

Data sources: USGS National Hydrography Dataset; City of Brentwood GIS; Contra Costa County GIS. Map date: February 18, 2013.

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.9-1: Watersheds (HUC-8)

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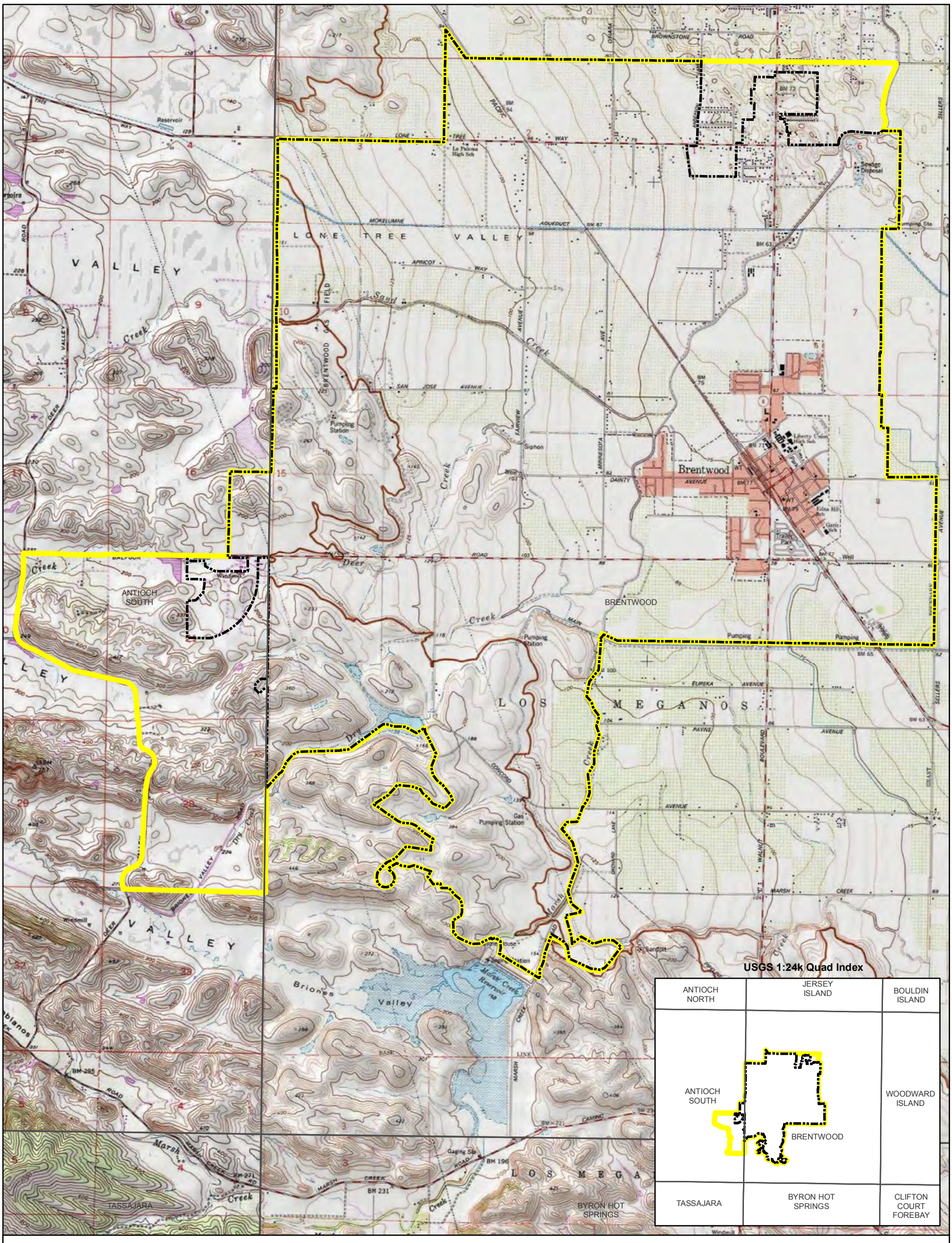

USGS 1:24k Quad Index

ANTIOCH NORTH	JERSEY ISLAND	BOULDIN ISLAND
ANTIOCH SOUTH	BRENTWOOD	WOODWARD ISLAND
TASSAJARA	BYRON HOT SPRINGS	CLIFTON COURT FOREBAY

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.9-2: USGS Topographic Map

1:24k Quadrangle Map Boundary

City of Brentwood

Brentwood Sphere of Influence

0 1,000 2,000 4,000

Feet

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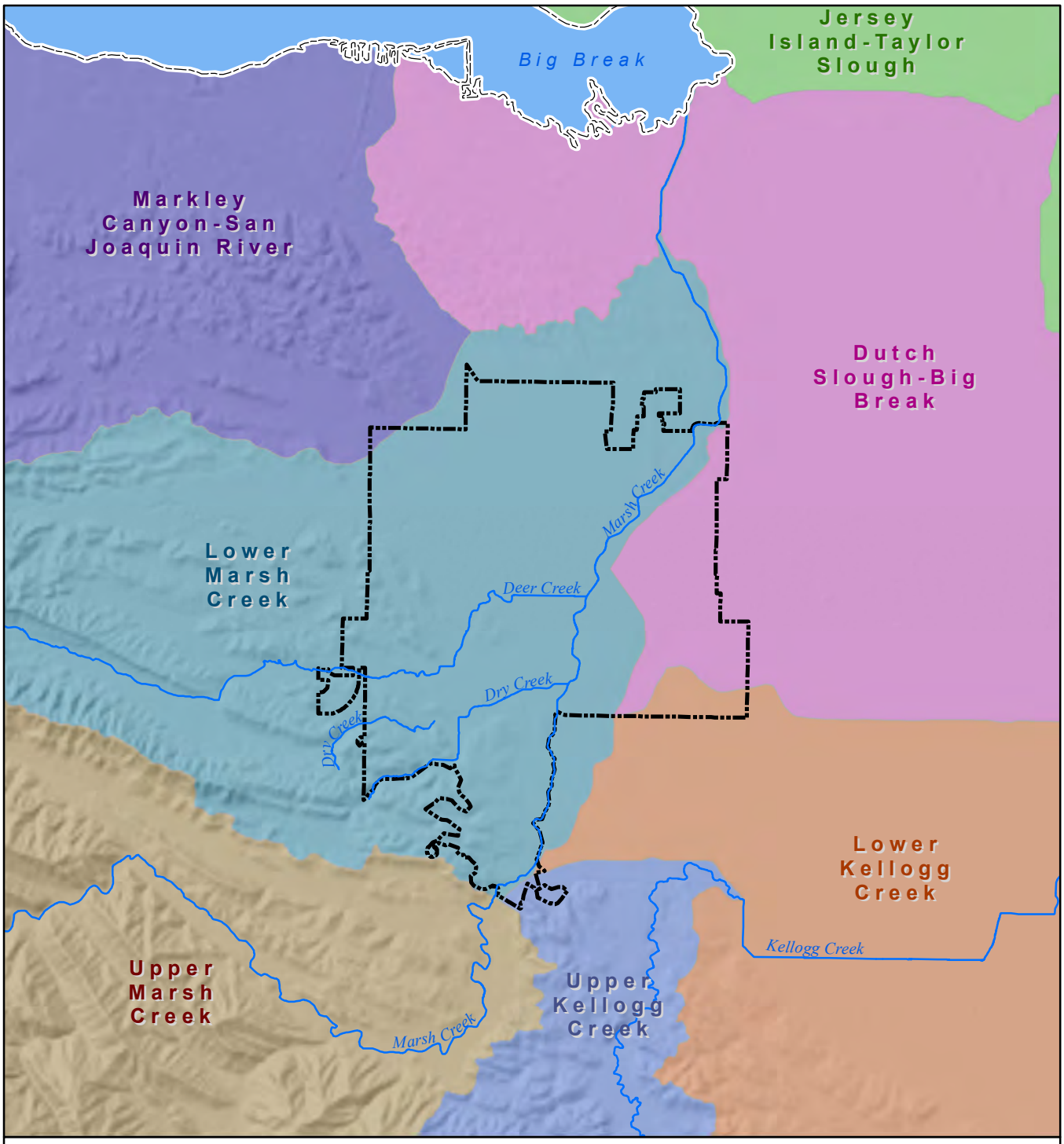
Data sources: 2011 National Geographic Society, iCubed; City of Brentwood GIS; Map date: February 14, 2013.



Cataloging Code (HUC-12)

- Dutch Slough-Big Break
- Jersey Island-Taylor Slough
- Lower Kellogg Creek
- Lower Marsh Creek
- Markley Canyon-San Joaquin River
- Upper Kellogg Creek
- Upper Marsh Creek

Data sources: USGS and USDA-NRCS Watershed Boundary Dataset; City of Brentwood GIS; Contra Costa County GIS. Map date: February 21, 2013.

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.9-3: Watersheds (HUC-12)

0 0.5 1
Miles

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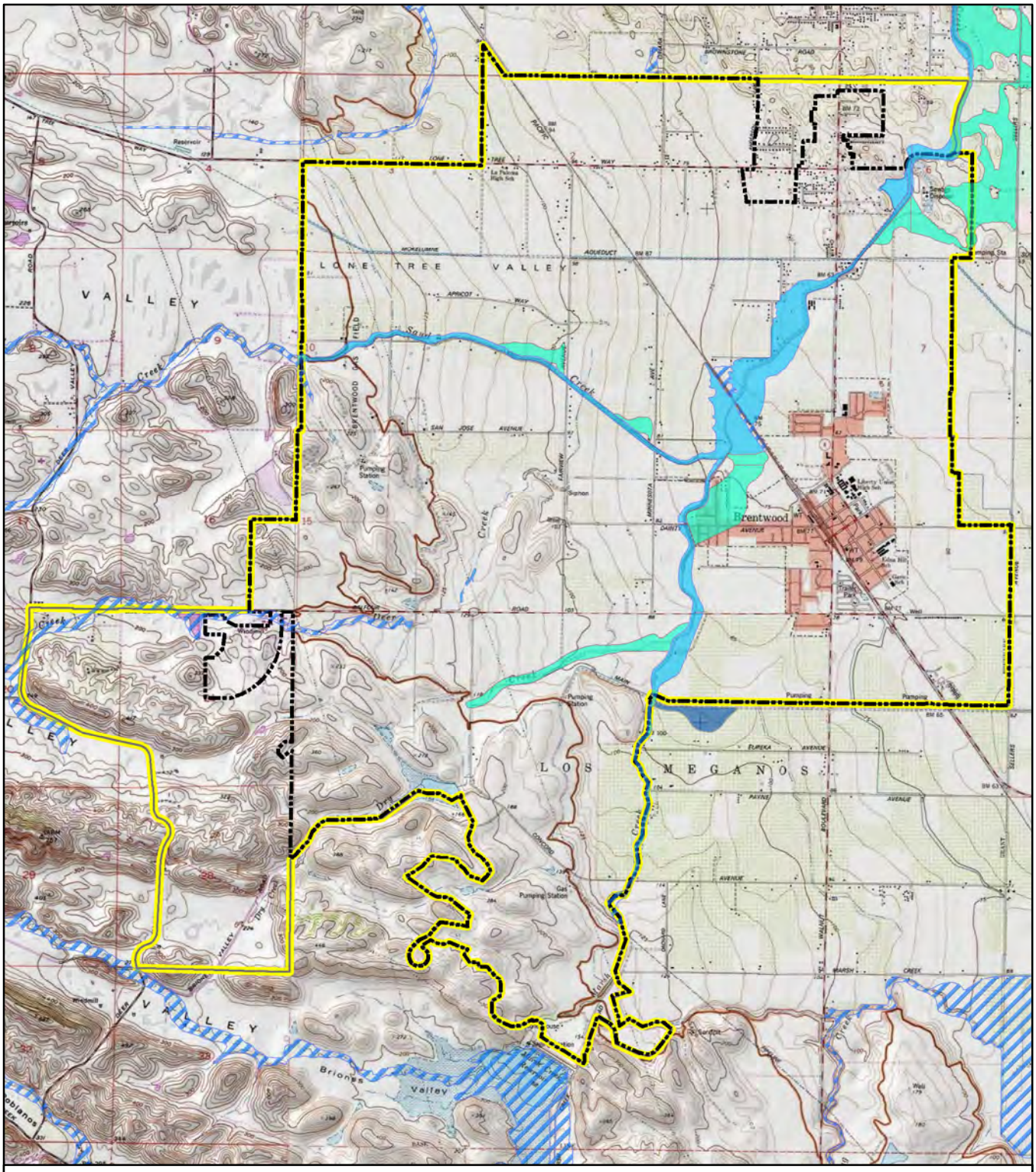

Flood Zone Designation

- A - 100-year flood zone (No BFE)
- AE - 100-year flood zone (BFE provided)
- AH - 100-year flood zone (ponding)
- 500-yr flood zone

Planning Areas

- City of Brentwood
- Brentwood Sphere of Influence

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.9-4: FEMA Flood Map

0 0.5 1
Miles

Data sources: FEMA Map Service Center; USGS Topo - National Geographic, iCubed, 2011. City of Brentwood GIS. Map date: February 20, 2013.

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The purpose of this EIR section is to address at a programmatic level the consistency of the General Plan Update with applicable local land use and planning regulations and policies, and to identify if the General Plan Update would impact the city by inducing substantial population growth or remove housing. This section identifies the existing land use conditions, analyzes the project's consistency with relevant planning documents and policies adopted for the purpose of avoiding or mitigating an environmental effect, and recommends mitigation measures to avoid or minimize the significance of potential environmental impacts. General Plan policies associated with other specific environmental topics (aesthetics, air quality, biological resources, cultural resources, geology/soils, greenhouse gas, hazards, hydrology/water quality, noise, public services, recreation, transportation, and utilities) are discussed in the relevant sections of this EIR.

Information in this section is based on information provided by the following reference materials: *Plan Bay Area* (ABAG 2013); Population and Housing Estimates for Cities, Counties, and the State, *January 1, 2011-2013*, with 2010 Benchmark (DOF) 2013; the *General Plan Existing Conditions Report* (City of Brentwood 2013); the *Housing Element (*City of Brentwood 2012); *Zoning* – Title 17 of the Brentwood Municipal Code; the *Downtown Specific Plan* (City of Brentwood 2005); the *Brentwood Boulevard Specific Plan* (City of Brentwood 2012); and review of ground and aerial photographs.

3.10.1 ENVIRONMENTAL SETTING

EXISTING CONDITIONS

The city of Brentwood, incorporated in 1948, was among the fastest growing cities in California during the early and mid-2000's, and encompasses 14.8 square miles in eastern Contra Costa County on the rim of the San Francisco Bay Area. The city has a strong agricultural heritage, but has become more urbanized with the rapid population growth of the last several years. Brentwood is primarily a residential community due to its historically affordable housing supply, and has an estimated population of 53,278 as of January 1, 2013. Concurrent with the housing boom of the early and mid-2000's, the city experienced a substantial increase in retail and service uses, as well as moderate growth in the light industrial sector. Despite these increases, the city is still a popular community for commuters. Additionally, the Contra Costa County agricultural core is situated to the south and east of the community, and supports an agri-tourism industry, which has long been popular with residents from across the region.

There are four key boundary lines addressed by the General Plan, which make up the study area for the General Plan EIR. These include the city limits, the Sphere of Influence (SOI), the Urban Limit Line (ULL), and the Planning Area, as shown on Figure 2.0-2 and described below.

City Limits: Includes the area within the City's corporate boundary, over which the City exercises land use authority and provides public services.

Sphere of Influence (SOI): The probable physical boundary and service area of the City, as adopted by the Local Agency Formation Commission (LAFCO). The SOI includes both incorporated and unincorporated areas within which Brentwood will have the primary responsibility for the provision of public facilities and services. Lands within the SOI but outside existing city limits may be considered for development after annexation. Until that

time, the area within the SOI is under the jurisdiction of Contra Costa County and its General Plan; however, City policies will influence the County's considerations of development proposals for lands within the SOI.

Urban Limit Line (ULL): A countywide growth management tool used to ensure that each jurisdiction in the county regulates the geographic extent of urban growth and has a plan for future transportation improvements and urban services. The establishment of an urban limit line is a requirement of Measure J, which took effect on April 1, 2009. Compliance with Measure J is necessary for local jurisdictions to continue receiving their share of Local Transportation Maintenance and Improvement funds generated by the Measure J transportation sales tax, and to be eligible for Contra Costa Transportation for Livable Communities funds. All jurisdictions in the county (including Brentwood) had the option of either adopting the Measure L County voter-approved urban limit line or their own local voter-approved urban limit line. In January 2008, the Brentwood City Council adopted a resolution adopting the Measure L County voter-approved urban limit line.

Planning Area: For the purposes of the General Plan, the Planning Area is defined as the area surrounding the city limits and SOI that is included in the analysis and planning for the 20-year horizon of the General Plan.

Land Use Patterns

When discussing land use, it is important to distinguish between planned land uses and existing land uses. The General Plan land use designations identify the long-term planned use of land but do not present a complete picture of existing land uses. The Contra Costa County Assessor's office maintains a database of existing land uses on individual parcels, including the number of dwelling units and related improvements such as non-residential building square footage. This information is used as the basis for property tax assessments and is summarized in Table 3.10-1 and depicted on Figure 3.10-1.

TABLE 3.10-1: ASSESSED LAND USES (2013): CITY OF BRENTWOOD

USE CODE DESCRIPTION	PARCELS	RESIDENTIAL UNITS	NON-RESIDENTIAL SQUARE FEET	ACRES	% OF TOTAL ACRES
Residential - Single Family Detached					
Single Family, Residence	12,690	12,690	-	2,470.4	29.2%
Single family, PUD or Other	3,119	3,119	-	442.5	5.2%
Single Family, 2 or More Units	66	132	-	67.8	0.8%
Single Family, Residence, 2 Sites+	19	19	-	47.9	0.6%
Single Family, Other Land	90	90	-	21.0	0.2%
Single Family, Improvements	11	0	-	17.5	0.2%
Subtotal	*15,995*	*16,050*	-	*3,067.0*	*36.3%*
Residential – Multifamily and Single Family Attached					
Apartments, 60 Units or More	8	699	-	45.8	0.5%
Apartments, 25-59 Units	6	234	-	12.7	0.1%
Attached Condos, Townhomes	298	298	-	11.7	0.1%
Apartments, 5-12 Units	7	60	-	3.4	0.0%

TABLE 3.10-1: ASSESSED LAND USES (2013): CITY OF BRENTWOOD

USE CODE DESCRIPTION	PARCELS	RESIDENTIAL UNITS	NON-RESIDENTIAL SQUARE FEET	ACRES	% OF TOTAL ACRES
Duplex	6	12	-	2.3	0.0%
Fourplex	12	48	-	2.2	0.0%
Combinations	9	31	-	2.1	0.0%
Apartments, 13-24 units	2	27	-	1.7	0.0%
Triplex	5	15	-	0.9	0.0%
Subtotal	*353*	*1,424*	-	*82.7*	*1.0%*
Commercial					
Golf Courses	46	-	24,246	565.9	6.7%
Shopping Centers	54	-	1,984,852	190.2	2.2%
Commercial Stores (not supermarkets)	69	-	709,646	77.0	0.9%
Multiple and Commercial; Misc.	11	-	7,128	30.1	0.4%
Motels, Hotels, Mobile Home Parks	7	181	95,647	29.2	0.3%
Office Buildings	46	-	416,608	25.1	0.3%
Auto Repair	22	-	146,901	19.7	0.2%
Service Stations; Car Washes; etc.	17	-	67,652	16.4	0.2%
Medical; Dental	12	-	210,642	10.6	0.1%
Community Facilities; Recreational	3	-	84,254	10.1	0.1%
Drive-In Restaurants	9	-	22,022	6.5	0.1%
Auto Agencies	5	-	31,391	5.0	0.1%
Restaurants	8	-	29,852	4.0	0.0%
Bowling Alleys	1	-	29,982	2.6	0.0%
Small Grocery Stores	3	-	11,460	2.2	0.0%
Financial Buildings	5	-	23,556	1.9	0.0%
Theaters	1	-	11,803	0.3	0.0%
Subtotal	*319*	*181*	*3,907,642*	*996.9*	*11.8%*
Industrial					
Industrial Park with Structures	21	-	404,513	29.8	0.4%
Mini-warehouse (Public Storage)	5	-	454,392	18.1	0.2%
Light Industrial	9	-	146,038	14.3	0.2%
Miscellaneous Improvements	1	-	984	2.2	0.0%
Subtotal	*36*	-	*1,005,927*	*64.5*	*0.8%*
Agriculture and Land					
Orchards, Crops 10A to 40A	21	-	16,572	312.0	3.7%
Urban Acreage 40A and Over	3	-	0	274.4	3.2%
Rural Residential, misc., 1A to 10A	45	-	8,074	222.6	2.6%
Urban Acreage 10A to 40A	5	-	1,448	108.8	1.3%
Rural Residential, 1A to 10A	14	14	-	65.8	0.8%
Orchards, Crops 40A and Over	1	-	0	51.4	0.6%
Agricultural Preserves	3	-	6,540	39.1	0.5%
Dry Farming, Grazing, 10A to 40A	2	-	0	31.9	0.4%

TABLE 3.10-1: ASSESSED LAND USES (2013): CITY OF BRENTWOOD					
USE CODE DESCRIPTION	PARCELS	RESIDENTIAL UNITS	NON-RESIDENTIAL SQUARE FEET	ACRES	% OF TOTAL ACRES
Subtotal	*94*	*14*	32,634	*1,106.0*	*13.1%*
Institutional					
Government-owned	516	-	215,300	1,096.4	13.0%
School & Colleges	14	-	112,743	92.0	1.1%
Churches	21	-	278,384	52.7	0.6%
Residential Care Facilities	5	-	263,824	10.4	0.1%
Service Organizations; Group Homes	2	-	11,673	2.4	0.0%
Cemeteries & Mortuaries	1	-	4,378	0.2	0.0%
Subtotal	*559*	-	*886,302*	*1,254.1*	*14.8%*
Miscellaneous					
Manufactured Housing	62	61	0	668.2	7.9%
Common Area Parcels in PUDs	202	-	0	170.0	2.0%
Private Roads	26	-	0	60.0	0.7%
Taxable Municipally-owned Property	10	-	0	44.2	0.5%
State Board Assessed Parcels	5	-	0	18.6	0.2%
Public and Private Parking	8	-	0	9.6	0.1%
Pipelines and Canals	3	-	0	8.8	0.1%
Subtotal	*316*	*61*	*0*	*979.4*	*11.6%*
Vacant					
Vacant, Single Family Residential	1,719	-	0	338.9	4.0%
Vacant, Commercial	105	-	0	289.2	3.4%
Vacant, Single Family 2+ Units	12	-	0	73.5	0.9%
Vacant, Unbuildable	59	-	0	24.7	0.3%
Vacant, Industrial	9	-	0	12.3	0.1%
Vacant, Multifamily	3	-	0	10.9	0.1%
Subtotal	*1,952*	-	*0*	*749.5*	*8.9%*
No Use Code	45	-	0	158.6	0.3%
TOTALS	***19,624***	***17,730***	***5,832,505***	***8,458.65***	***100.0%***

SOURCE: CONTRA COSTA COUNTY ASSESSOR'S OFFICE, 2013; DE NOVO PLANNING GROUP, 2013

Existing land uses refers to the existing built environment, which may be different from the land use or zoning designations applied to land in the city for planning purposes. Existing land uses are based on data provided by the County Assessor and are described below.

RESIDENTIAL

Residential uses in Brentwood include single-family houses and multi-family developments.

Single family residential is the dominant land use type in the city, accounting for 36.3% of the city's land area. Single family residential land uses are generally located throughout the city, as shown on Figure 1-6. There are approximately 16,050 single family residential units in the city, located on 15,995 parcels which total 3,067 acres. The majority of single family residential units (12,690 units) are typical single family residences, with one residence located on one parcel. Single family

uses in a Planned Unit Development or other single family-type of residential development that has a common area are the second most common type of single family residential use, accounting for 3,119 units on 442.5 acres. There are 241 single family units built with two single family uses on a parcel, a single family unit on "other" land, or a single family unit on two or more sites.

Multifamily residential refers to parcels that contain more than one housing unit, including duplexes, triplexes, fourplexes, condominiums, townhomes, and apartment buildings. The predominate type of multifamily development is large apartment complexes of 60 units or more, which account for 699 multifamily units located on eight parcels, and apartment complexes of 25 to 59 units which account for 234 units located on six parcels. Attached townhomes and condominiums account for another 298 units. An additional 193 multifamily units are in duplexes, triplexes, fourplexes, and apartment complexes of five to 24 units. Multifamily uses are generally located near services, including retail uses, and are located in and around the Downtown area, along the Brentwood Boulevard corridor, along Sycamore Avenue, and along Shady Willow Lane, as shown on Figure 3.10-1.

COMMERCIAL

The majority of non-residential development in the city is commercial, which includes approximately 3.9 million square feet (s.f.) on 996.9 acres. Commercial uses, as identified by the County Assessor, are varied. The predominate type of commercial land use, based on s.f. of development, is shopping centers, which account for almost 2 million s.f. located on 54 parcels, totaling 190.2 acres. This is followed by commercial stores (not supermarkets) which account for 709,646 s.f. of development on 69 parcels that total 77.0 acres. Office buildings (416,608 s.f.), medical and dental offices (210,642 s.f.), and auto repair (146,901) also represent a large portion of the city's commercial uses. The commercial use that represents the most land area is golf courses, which are developed on 565.9 acres in the city, but only account for 24,246 s.f. of development. The motels, hotels, and mobile home parks category totals 95,647 s.f. of developed commercial uses and also includes 181 mobile home units. Other commercial uses in Brentwood include gas stations and car washes, private community facilities, bowling alleys, financial buildings, theaters, drive-thru restaurants, restaurants, auto agencies, and miscellaneous. As shown on Figure 3.10-1, many of the city's commercial uses are located in and around the Downtown core and along Brentwood Boulevard. Larger shopping centers are located along Lone Tree Way in northwest Brentwood, on Sand Creek Road east of SR 4, and in neighborhood commercial centers.

INDUSTRIAL

Industrial uses total approximately one million s.f. of development on 64.5 acres. Industrial uses include industrial park (404,513 s.f. of development on 21 parcels), light industrial (146,038 s.f. of development on 14.3 acres), and public storage units (454,392 s.f. of development on 18.1 acres). Industrial uses are located along the Union Pacific Railroad line, Brentwood Boulevard, generally outside of the Downtown core area, and at the Sunset Industrial Complex on Sunset Road.

INSTITUTIONAL

Institutional uses include government facilities, schools and colleges, churches, cemeteries/mortuaries, service organizations and group homes, and residential care facilities. There are 559 parcels with institutional uses that include 886,302 s.f. of development on 1,254.1

acres. Institutional uses represent the second largest category of development, after single family residential.

Churches represent the most development in the institutional category with 278,384 s.f. on 52.7 acres. The category with the second highest amount of development is residential care facilities, which include 263,824 s.f. of development on 10.4 acres. Government-owned parcels represent the largest land area of institutional uses, with 516 parcels totaling 1,096.4 acres and including 215,300 s.f. of development. Government facilities include City Hall, the Community Center, the Senior Activity Center, City parks and recreation facilities, and facilities operated by other governmental entities. Institutional uses are located throughout the city as shown on Figure 3.10-1.

AGRICULTURE AND LAND

The agriculture and land category includes rural residential uses, land set aside for urban uses, orchards and crops, dry-farming and grazing land, and agricultural preserves. Most of this land is not developed with built structures. The urban acreage categories have the most land area, with 383.2 acres of land on eight parcels over 10 acres in size. The orchards and crops categories have the second highest land area, with 363.4 acres of orchards and crops on parcels of 10 acres or more. There are 14 homes on rural residential parcels, as well as an additional 45 parcels of rural residential uses with miscellaneous improvements. There are 39.1 acres of agricultural preserves in the city.

MISCELLANEOUS

The miscellaneous category includes private roads, pipelines and canals, State Board-assessed parcels, public and private parking, taxable municipally-owned property, common area parcels in PUDs, and manufactured housing. The category with both the largest amount of land area as well as development is manufactured housing, which includes 61 homes on 668.2 acres.

VACANT

Vacant land is currently unused. Almost 9 percent of the land in Brentwood is vacant, according to the County Assessor. The vacant category with the largest amount of area is single family residential land that can accommodate one unit per parcel, which totals 338.9 acres. Vacant industrial land consists of nine parcels totaling 12.3 acres while vacant commercial land consists of 105 parcels totaling 289.2 acres. The vacant category with the most parcels is single family residential, with 1,719. These are primarily parcels that have been subdivided, but not yet developed.

Development Trends

Figure 3.10-2 identifies residential and non-residential parcels by the time frame that the uses on the parcel were developed, based on available County Assessor's data. Prior to 1976, development in the Brentwood area was primarily centered in and around the Downtown core and along Brentwood Boulevard.

From 1976 to 1989, growth was primarily residential from the Downtown core toward the west. The majority of residential growth occurred in subdivisions that were built in the area generally north of Balfour Road, east of Fairview Avenue, and both north and south of Central Boulevard.

Non-residential development occurred directly east of the Downtown as well as developments north of Downtown, generally along Brentwood Boulevard.

From 1990 to 1999, significant amounts of residential growth occurred, with development filling out much of the area generally from O'Hara Avenue to what is now State Route 4, along both sides of Balfour Road, and up to Sand Creek Road. Non-residential growth filled out much of the area directly north of the Downtown, as well as scattered sites along Brentwood Boulevard south of Balfour Road.

From 2000 to 2009, the city's borders expanded significantly and residential development occurred west of SR 4 and filled out areas south of Balfour Road to the southern city boundaries as far as Concord Avenue. Residential development also extended eastward from the Downtown core area to the eastern city limits, but did not fill in the area along Brentwood Boulevard north of the core area. Residential development also extended north of Sand Creek Road to the northern city boundaries, generally between Shady Willow Lane and O'Hara Avenue, with some residential development also occurring east of O'Hara Avenue. During this time period, a range of commercial, industrial, and other non-residential development occurred, including shopping centers adjacent to SR 4, the Sunset Industrial Complex in northeast Brentwood, the John Muir Health Outpatient Center, and various neighborhood commercial centers.

Pending and Approved Projects

Table 3.10-2 lists recently approved and pending residential projects and Table 3.10-3 lists recently approved and pending commercial projects in the city.

TABLE 3.10-2: APPROVED AND PENDING RESIDENTIAL DEVELOPMENT PROJECTS

PROJECT NAME	DESCRIPTION	STATUS
Palmilla Integral Communities	471 single family (SF) units and 108 multifamily (MF) units approved on 77.45 acres	12 SF permits issued 471 SF units not yet built 108 MF units not yet built
Tingdahl	Two single family units approved on 2.17 acres	Not yet built
St. Martins Place	8 SF units approved on 4.02 acres	3 SF units occupied 5 SF units not yet built
Garin Corners	168 SF units approved on 13.06 acres	32 SF units occupied 136 SF units not yet built
Brentwood Estates	5 SF units approved on 5.01 acres	2 SF units occupied 3 SF units not yet built
St. James Tract	8 SF units approved on 3.77 acres	1 SF unit occupied 7 SF units not yet built
Mission Grove	132 SF units approved on 15.60 acres	132 SF units not yet built
Steeplechase II	6 SF units proposed on 1.20 acres	Project pending, not yet approved

TABLE 3.10-2: APPROVED AND PENDING RESIDENTIAL DEVELOPMENT PROJECTS		
PROJECT NAME	DESCRIPTION	STATUS
Magnolia	33 SF units approved on 3.62 acres	33 SF units not yet built
Parkside Villas	37 SF units approved on 10.40 acres	37 units not yet built
Siino	9 SF units approved on 3.35 acres	9 SF units not yet built
Portofino	240 SF units approved on 112.40 acres	111 SF units occupied 11 SF units under construction 118 SF units not yet built
Bridle Gate	232 SF units proposed on 51.00 acres	Project pending, not yet approved
Barrington	494 SF units approved on 159.72 acres	59 SF units occupied 12 SF units under construction 423 SF units not yet built
Cedarwood	177 SF units approved on 54.69 acres	98 SF units occupied 79 SF units not yet built
Ferro-Ronconi	160 SF units approved on 42.30 acres	160 SF units not yet built
Trilogy at the Vineyards	1,250 SF units approved on 623.27 acres 360 MF units are optional Commercial could also be built	240 SF units occupied 18 SF units under construction 842 SF units not yet built 360 MF units could be built
Rios	3 SF units approved on 3.85 acres	1 SF unit occupied 2 SF units not yet built
Terreno	311 SF units approved on 23.00 acres	222 SF units occupied 39 SF units under construction 50 SF units not yet built
The Grove at Sunset Court	54 MF units approved on 3.18 acres	54 MF units under construction
Siena Village	90 SF units approved on 11.0 acres	32 SF units occupied 58 SF units not yet built
SW Fairview/Apricot	2 SF units proposed on 1.22 acres	Project pending; not yet approved
Steeplechase	180 SF units approved on 46.67 acres	35 SF units occupied 145 SF units not yet built
Rose Garden	511 SF units, 12 secondary units approved on 33.10 acres	493 SF units occupied 18 SF units not yet built
Lexington Park	162 SF units approved on 55.41 acres	84 SF units occupied 14 SF units under construction 64 SF units not yet built
Grant Street	4 SF units approved on 3.00 acres	1 SF unit occupied 3 SF units not yet built
Amber & Windy Springs	5 SF units approved on 2.68 acres	1 SF unit occupied

TABLE 3.10-2: APPROVED AND PENDING RESIDENTIAL DEVELOPMENT PROJECTS		
PROJECT NAME	DESCRIPTION	STATUS
Lane		4 SF units not yet built
TOTAL	106 SF units permitted/under construction; 54 MF units under construction 1,959 SF units approved, not yet built; 468 MF units approved, not yet built 240 SF units proposed, not yet approved	

SOURCE: CITY OF BRENTWOOD, 2013

TABLE 3.10-3: APPROVED AND PENDING NON-RESIDENTIAL DEVELOPMENT PROJECTS		
PROJECT NAME	DESCRIPTION	STATUS
Cornerstone Church	65,451 s.f. on 6.87 acres	Pending
Delta Fence	25,916 s.f. of industrial uses on 2.50 acres	Approved, Permit Issued
Neighborhood Church	27,017 s.f. on 2.50 acres	Approved, Permit Not Issued
City of Brentwood Solid Waste Transfer Station	27,865 s.f. on 5.00 acres	Approved, Permit Issued
The Plaza at Balfour II	20,000 s.f. of office uses on 2.20 acres	Approved, Permit Not Issued
Garin Commercial	44,300 s.f. of retail and 55,500 s.f. of office uses on 9.89 acres	Approved, Permit Issued
Brentwood Plaza II	7,430 s.f. of retail and 1,301 s.f. of industrial uses on 1.00 acres	Approved, Permit Not Issued
The Rock Church	21,435 s.f. on 5.62 acres	Approved, Permit Not Issued
Tri-City Plaza Office	11,096 s.f. of office uses on 1.08 acres	Pending
Sciortino Ranch	Mixed-use on 61.00 acres	Approved, Permit Not Issued
The Shops at Fairview	94,000 s.f. of retail uses on 9.60 acres	Approved, Permit Issued
City Block	49,364 s.f. of retail uses on 4.47 acres	Approved, Permit Issued
Auto Zone	7,600 s.f. of retail uses on 1.00 acres	Approved, Permit Not Issued
McDonald's	3,888 s.f. on 1.86 acres	Pending
Kendall Plaza	4,400 s.f. of retail, 7,110 s.f. of office, and 17,592 s.f. of industrial uses on 2.0 acres	Approved, Permit Issued
Lone Tree Crossings	117,368 s.f. of retail uses on 9.69 acres	Approved, Permit Issued

TABLE 3.10-3: APPROVED AND PENDING NON-RESIDENTIAL DEVELOPMENT PROJECTS		
PROJECT NAME	DESCRIPTION	STATUS
The Streets of Brentwood	460,000 s.f. of retail uses on 53.67 acres	Approved, Permit Issued
Best Western Motel	45 rooms, 28,260 other s.f. on 0.92 acres	Approved, Permit Issued
LDS Meeting House	16,850 s.f. on 3.40 acres	Approved, Permit Issued
Kingdom Hall	10,069 s.f. on 2.73 acres	Approved, Permit Issued
TOTAL	784,462 s.f. of retail uses approved 82,610 s.f. of office uses approved 11,096 s.f. of office uses pending 44,809 s.f. of industrial uses approved 131,496 s.f. of other uses approved 69,339 s.f. of other uses pending	

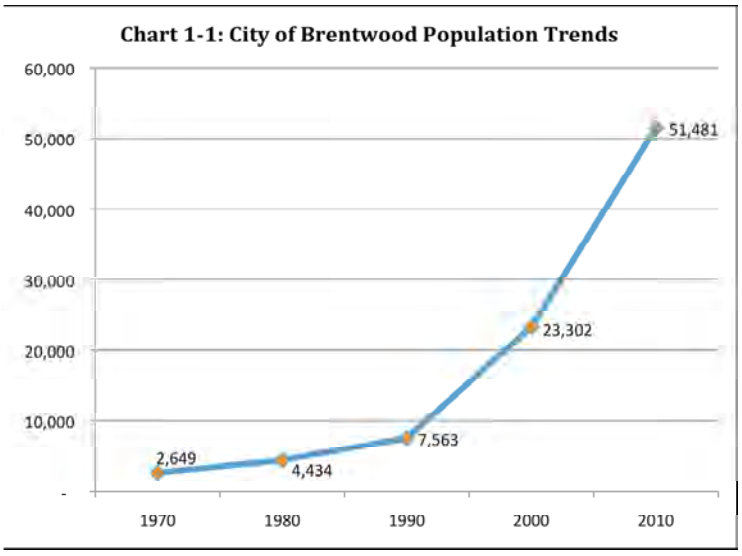
SOURCE: CITY OF BRENTWOOD, 2013

Population and Households

According to the California Department of Finance, the population of Brentwood was 53,278 as of January 1, 2013.

Historical population growth trends in Brentwood are depicted in Chart 1-1. Table 3.10-4 summarizes U.S. Census population and household data for Brentwood and Contra Costa County from 1970 through 2010.

Over the past several decades, Brentwood's population has grown at an impressive rate, making it one of the fastest growing cities in California. Incorporated in 1948 with a population under 1,700, Brentwood's growth rate was generally steady until the 1970s. Throughout the 1970s and 1980s growth fluctuated, reflecting the prevailing economic conditions. Both the national recession and high interest rates in the early 1980s caused a slackening in the population growth rate. From the mid-1980s through 2010, Brentwood's population grew significantly, more than doubling in both the 1991-2000 and 2001-2010 decades.



From 1970 to 1990, the city's population increased by 186% from 2,649 to 7,563 persons. During the 1990s and 2000s, Brentwood experienced rapid population growth increasing by approximately 581% from 7,563 to 51,481 between 1990 and 2010. In contrast, Contra Costa

County's total population increased by approximately 31% during the 1990s and 2000s. Between 1970 and 2010, Brentwood's population growth rate averages to 7.7% per year, while that of Contra Costa County is an average of 2% per year. As of January 2012, Brentwood's population was estimated by the State Department of Finance to be 52,575, an increase of 126% from the city's 2000 population of 23,302.

TABLE 3.10-4: POPULATION AND HOUSEHOLD GROWTH

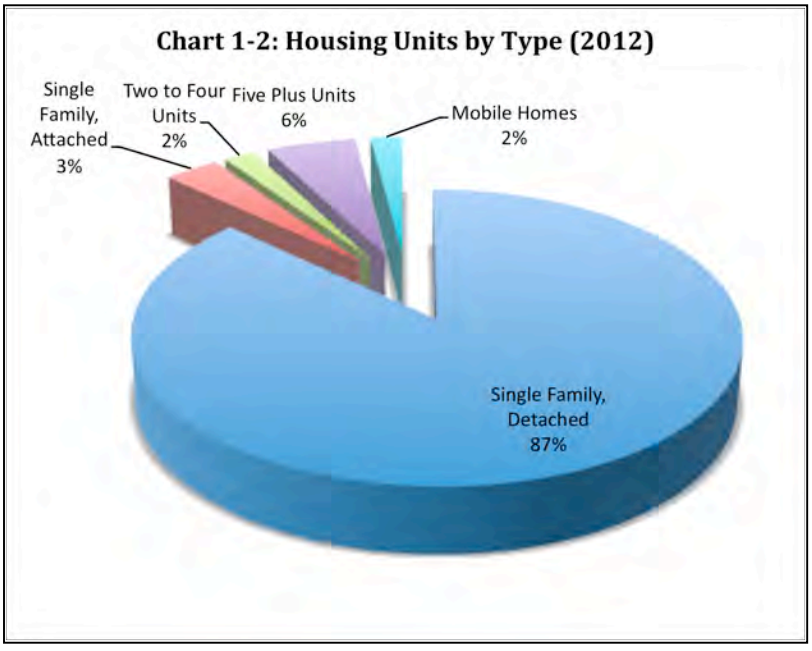
	1970	1980	1990	2000	2010	1970-1990 CHANGE	1990-2010 CHANGE	AVG. ANNUAL CHANGE
BRENTWOOD								
Population	2,649	4,434	7,563	23,302	51,481	186%	581%	7.7%
Households	844	1,532	2,475	7,497	16,494	193%	566%	7.7%
Persons per household	3.12	2.88	3.04	3.10	3.11	-3%	2%	0%
CONTRA COSTA COUNTY								
Population	558,389	656,380	803,732	948,816	1,049,025	44%	31%	2%
Households	172,951	241,418	300,288	344,129	375,364	74%	25%	2%
Persons per household	3.54	2.69	2.64	2.72	2.77	-25%	5%	-1%

SOURCE: U.S. CENSUS, 2000; US CENSUS, 2010; CALIFORNIA DEPARTMENT OF FINANCE, 2012; ABAG, 1990

Households have increased at a rate generally proportional to Brentwood's population, with both households and populations increasing by similar percentages from 1970 to 1990 and 2000 to 2010. Over the years, the average household size has fluctuated slightly with a high of 3.12 in 1970 and a low of 2.88 in 1980. In recent years, household size has remained at similar levels with an average of 3.10 persons per household in 2000 and 3.11 persons per household in 2010.

Housing Units

As shown in Table 3.10-5, the number of housing units in Brentwood has increased at rates similar to the population with significant increases since 1990. In 2012, there were 17,740 housing units in the city. From 1990 to 2010, housing units increased from 2,628 to 17,523, a 567% increase. The majority of the housing units in the city are single family detached, which account for 87% of housing units. The remaining housing types include single family attached (3%), duplexes through fourplexes (2%), multifamily apartments with five or



more units (6%), and mobile homes (2%).

In Contra Costa County, housing units have increased at a much slower pace, with a 27% increase from 1990 to 2010. The average annual increase in housing units since 1980 in Brentwood is 8.4%, compared with a 2% annual average increase in Contra Costa County. Due to the recent economic decline, growth in both the population and housing stock over the next few years is anticipated to remain relatively low, compared to historic averages.

TABLE 3.10-5: HOUSING UNITS

	1980	1990	2000	2010	1980-1990 CHANGE	1990-2010 CHANGE	AVG. ANNUAL CHANGE
Brentwood	1,570	2,628	7,788	17,523	67%	567%	8.4%
Contra Costa County	251,918	316,170	354,577	400,263	26%	27%	2%

SOURCE: U.S. CENSUS, 2000; US CENSUS, 2010; CALIFORNIA DEPARTMENT OF FINANCE, 2012; ABAG, 1990

Growth Projections

The Association of Bay Area Governments (ABAG) projects population growth in the San Francisco Bay Area. The adopted Plan Bay Area does not include population projections at the local level, but rather presents regional projections. Plan Bay Area states that by 2040 the San Francisco Bay Area is projected to add 2.1 million people, increasing total regional population from 7.2 million to 9.3 million, an increase of 30 percent or roughly 1 percent per year.

3.10.2 REGULATORY SETTING

STATE

California General Plan Law

Government Code Section 65300 requires that each county and city adopt a General Plan "for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning."

The General Plan consists of a statement of development policies and includes a diagram or diagrams and text setting forth objectives, principles standards, and plan proposals. It is a comprehensive long-term plan for the physical development of the county or city and is considered a "blueprint" for development. The General Plan must contain seven state-mandated elements: Land Use, Open Space, Conservation, Housing, Circulation, Noise, and Safety. It may also contain any other elements that the county or city wishes to include. The land use element designates the general location and intensity of designated land uses to accommodate housing, business, industry, open space, education, public buildings and grounds, recreation areas, and other land uses.

The 2003 General Plan Guidelines, established by the Governor's Office of Planning and Research (OPR) to assist local agencies in the preparation of their general plans, further describe the mandatory land use element as a guide to planners, the general public, and decision makers prescribing the ultimate pattern of development for the county or city.

Regional Housing Needs Plan

California General Plan law requires each city and county to have land zoned to accommodate a fair share of the regional housing need. The State determines the fair-share allocated to each region. The share is known as the Regional Housing Needs Allocation (RHNA). The RHNA for the Bay Area is based on a Regional Housing Needs Plan (RHNP) developed by the local council of government. ABAG is the lead agency for developing the RHNP for a nine-county area that includes Contra Costa County and the City of Brentwood. The City's RHNA that covers the period from mid-2007 through 2014 includes 2,705 units. The City's RHNA for 2014 through 2022 includes 760 units.

Transportation 2035 Plan

The *Transportation 2035 Plan* (MTC 2009) is the most recently adopted Regional Transportation Plan prepared by the Metropolitan Transportation Commission (MTC) for the San Francisco Bay Area region. The *Transportation 2035 Plan* specifies how some $218 billion in anticipated Federal, State, and local transportation funds will be spent in the nine-county Bay Area during the next 25 years. Consistency with applicable air quality plans is demonstrated through the *Transportation Air Quality Conformity Analysis for the Transportation 2035 Plan* (MTC 2009), which was prepared using population forecasts for each local jurisdiction as inputs into the regional travel demand model.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) was developed to protect the quality of the environment and the health and safety of persons from adverse environmental effects. Discretionary projects are required to be reviewed consistent with the requirements of CEQA to determine if there is potential for the project to cause a significant adverse effect on the environment. Depending on the type of project and its potential effects, technical traffic, noise, air quality, biological resources, and geotechnical reports may be needed. If potential adverse effects can be mitigated, a mitigated negative declaration is required. If potentially adverse effects cannot be mitigated, an environmental impact report is required. These documents have mandated content requirements and public review times. Preparation of CEQA documents can be costly and, despite maximum time limits set forth in the Public Resources Code, can extend the processing time of a project by a year or longer.

LOCAL

City of Brentwood 1993 General Plan

The City's current General Plan was adopted June 8, 1993 and reflects amendments through March 2014. Amendments to the General Plan include updates of the Growth Management, Land Use, and Circulation Elements in 2001, and the Housing Element in 2012. Land uses in Brentwood have been developed based on the Land Use Map, goals, and policies established by the City's existing General Plan. The City's existing General Plan includes 40 broad goals that guide land use and planning decisions within the city. The goals most related to the topic of land use include:

Land Use Element

GOAL 1: A diverse, self-sufficient community that offers a broad spectrum of job opportunities, housing types, community facilities and commercial services.

GOAL 2: A high quality residential environment that positively contributes to the special, small-town atmosphere of Brentwood.

GOAL 3: A diversified mix of strong retail centers, service commercial activities, manufacturing enterprises and high-paying employment opportunities that contribute to Brentwood's economic well-being.

GOAL 4: A variety of employment opportunities in Brentwood provided by adequate areas for industrial, commercial and office land uses.

GOAL 5: A high quality natural environment in Brentwood.

Community Design Element

GOAL 1: Promote the highest standards of architecture and site design for all development projects, both public and private.

GOAL 2: Preserve and enhance the views of dominant natural features (i.e. Diablo, Foothills and local open space).

GOAL 3: Preserve and enhance the identity and small town character of Brentwood.

Growth Management Element

GOAL 3: Development patterns – balanced, efficient, diverse and high quality development patterns within the boundaries of the City.

These guiding goals are reinforced by the City's General Plan Land Use Map through the designation of commercial, mixed use, and office uses along primary transportation corridors; residential development that is proximate to existing and/or planned services, parkland, and other amenities; permanent open space and agricultural conservation areas that buffer the community and limit the extent of growth; the Downtown Specific Plan to ensure that the small-town character of the city's downtown area is maintained; and specific plan and urban reserve areas to guide future growth.

EXISTING LAND USE DESIGNATIONS

Table 3.10-6 summarizes the City's existing General Plan land use designations for areas within the city limits, Sphere of Influence, and Planning Area by acreage and parcels. In some cases, a single parcel will have multiple land use designations, so the number of parcels listed for each designation exceeds the total number of parcels as counted by the County Assessor. Land use designations on the adopted General Plan Land Use Map, as amended through March 2014, are shown on Figure 3.10-3.

A brief description of each of the adopted (existing) General Plan land use designations is provided below. These descriptions are based on the text of the General Plan Land Use Element, as updated in 2001.

Ranchette Estate (RE) - The RE residential category is intended to maintain and/or provide for large lots of one acre or more in size where residents want the proximity and amenities of urban life and yet are able to enjoy some of the benefits of a more rural environment. This residential land use category is intended to maintain some of the small town flavor or agricultural character of Brentwood's past. The permitted density range is 0 to 1.0 units per gross acre with a mid-range of 0.5 units per gross acre.

Very Low (VL) - The VL residential category provides for fairly large lots for single-family residences in an identifiable, suburban residential neighborhood, or cluster-style development designed with open space and other amenities. Neighborhoods with either development type will be part of the Brentwood urban area and be provided with urban public facilities and services. The permitted density range is 1.1 to 3.0 units per gross acre with a mid-range of 2 units per gross acre.

Low (L) - The L residential category is designed predominantly for single family detached houses, although higher density single family patio houses or zero lot line houses could be accommodated if offset with sufficient open space to maintain the gross density within the indicated range or if specific criteria can be met. Development in this category will generally result in 6,000 to 8,000 square foot lots. The permitted density range is 1.1 to 5.0 units per gross acre with a mid-range of 3 units per gross acre.

Medium (M) - Development in this category will be predominantly two- and four-plexes, small apartment buildings, and townhouses, although small lot detached single family development could be included. The permitted density range is 5.1 to 11.0 units per gross acre with a mid-range of 8 units per gross acre.

High (H) - This is a multi-family residential category predominantly for apartments and condominiums in structures of two or three stories with off-street parking and other requirements for higher density living. The level of amenities provided by multiple family projects, their locations, and their unit type will affect the actual density achieved. The permitted density range is 11.1 to 20.0 units per gross acre with a mid-range of 15.5 units per gross acre.

Very High (VH) – This is a multi-family residential category intended for apartments and/or condominiums in mixed-use areas. These units could be located in structures greater than three stories with off-street parking and other requirements suitable for pedestrian–oriented and/or work-live mixed-use neighborhoods. The level of amenities that these types of mixed use projects provide, the uses included, their locations, and their unit type will affect the actual density achieved. The permitted density range is 20.1 to 30.0 units per gross acre.

Regional Commercial (RC) - This land use category includes large-scale retail stores and service uses to serve the general needs of the community and the region along the State Route 4 Bypass on large development sites. This designation is intended for businesses which serve the needs of Brentwood residents as well as neighboring communities. Mixed uses allow for the development of large offices as a secondary use. Examples of uses include bulk retailers, large department stores, supermarkets, hardware stores, and offices.

General Commercial (GC) - This commercial category allows for concentrations of a variety of mixed commercial uses and service type businesses to serve specific areas of the City and

neighborhoods that are related to State Route 4 and some arterial intersections on parcels generally ranging from one to 20 acres. Such uses do not lend themselves to being located in regional commercial centers, but are encouraged in orderly clusters in suitable locations adjacent to the highway and major arterials. Depending upon the size of the center, a single major tenant (e.g. supermarket or small department store) or a single small tenant (e.g. convenience store) should provide the anchor. As a secondary use, independent small businesses (e.g. hair salons, shoe repair, certain small offices, and sit-down restaurants) will also be allowed. Examples of uses include convenience stores, fast serve eating establishments, auto repair, gas stations, and offices.

Downtown (DT) - This commercial category is designed to provide for the current and future uses of the downtown area of Brentwood, guided in large part through the adoption of the Downtown Specific Plan for the majority of area within this designation. Its purpose is to create a pedestrian-oriented, economically-viable town center. A variety of uses are allowed in this designation, including entertainment, retail, commercial, residential, civic, cultural and transit in a compact, walkable and unique setting that only the Downtown can offer. All new development occurring within the Downtown Specific Plan Area will be required to adhere to the development standards and guidelines established in the Specific Plan.

Brentwood Boulevard Specific Plan (BB) – This designation provides for the current and future uses along the Brentwood Boulevard corridor, directed by the standards and uses established by the Brentwood Boulevard Specific Plan.

Office (O) - This category is predominantly intended for development with a professional, institutional, or medical-dental orientation. The category is not meant for office space that is ancillary to a major industrial operation. Typical uses in this category might include medical, legal, and real estate offices.

Mixed Use Business Park (BP) - The intent and purpose of this mixed use category is to provide for integrated subclusters of business and research parks, large individual corporate establishments, and professional and administrative office or light industrial complexes. Selected complementary commercial activities and limited residential uses may be allowed. Examples of allowed uses in this category include computer software companies, medical supply companies, research laboratories, copying services, title companies, printing companies, warehousing, offices, cabinet makers, auto services, equipment repair, wholesale home furnishings, light manufacturing, retail commercial services, retail uses, convenience stores, restaurants, wineries (and associated orchards, row crops, production facilities, packing and shipping facilities, amphitheater and related uses, and catering facilities), multifamily housing units, senior apartments, and institutional levels of congregate care.

Industrial (I) - This category provides for industrial uses that tend to have some adverse impacts on the environment, including generating truck traffic, noise, odors, or smoke. Allowed uses include concrete batch plants, trucking operations, and power generators.

Park/Recreation (P) - This category includes existing and needed park and recreation facilities of varying size, function, and location to serve the entire community are reflected by this category. Standards for park sites are contained in the Growth Management element of the Planning and Development Chapter. The Land Use Map does not reflect all potential park sites. Neighborhood

Parks will be generally 5 to 7 acres in size, although mini-parks of at least one acre in size will be allowed. The Parks, Trails, and Recreation Master Plan discusses policies and service standards more fully.

School (S) - Locations of existing and future schools are depicted. School sites not existing are conceptually located in the general area of need. When at all possible, elementary schools shall be located within neighborhoods away from major arterials.

Community College (CC) – Location of future community college.

Public/Semipublic Facility (P/SP) - This designation provides for various public or semipublic facilities that serve the community (i.e. City/school district offices, corporation and maintenance yards and fire and police substations). P/SP also allows private schools, day care, senior housing, and religious institutions.

Open Space (OS) - This designation provides a buffer transition to the lands designated as agricultural conservation east of Sellers Avenue or areas along the northern, western, and southern edges of the City's Planning Area. Appropriate uses include grazing land, parks or wildlife preserves, and habitat areas.

Special Planning Area - Nineteen Special Planning Areas are designated by the adopted General Plan (see Figure 1-2, Special Planning Areas). Several of these areas are not likely to develop within the time frame of the General Plan, but it is the City's intent in designating them as Special Planning Areas to provide policy direction for their planning should growth pressure and/or market conditions advance the time frame for their development. Specific Plans or Planned Development Zoning will be required for the Special Planning Areas.

Urban Reserve (UR) - The land designated as Urban Reserve is located beyond the existing Sphere of Influence and urban service area of the City of Brentwood. Portions of this land are located outside the Urban Limit Line. It is anticipated that some areas within the Urban Reserve area may develop within the time frame of the adopted General Plan (by 2021). It is expected that more specific planning and feasibility studies will be required prior to the development of these areas. Development of these areas will require separate environmental review, general plan amendments, sphere of influence amendments, annexations, and other entitlements. In order to avoid "leapfrog" style development, provide for the logical extension of City services, and allow for appropriate planning of the City of Brentwood, the Urban Reserve areas could only develop when:

1. urban development is occurring immediately adjacent to the Urban Reserve parcel which intends to develop; and

2. the new development improves the jobs/housing balance or maintains an approximately 1.5:1 jobs/housing balance, or there is substantial justification why this ratio cannot be met. The City may determine that the above findings are not required if the development offers substantial amenities or benefits to the community that are beyond current levels. Prior to the submittal of an application for any entitlements within the Urban Reserve area, a market feasibility study shall be prepared by an independent consultant contracted by the City and paid for by the developer. The results of this study shall be used by the City Council to determine if it is appropriate for the property to develop.

Agricultural Conservation (AC) - This land use category encompasses lands with continuing commercial agricultural potential. The intent of the category is to retain primary agricultural use to the greatest extent possible. This is done by focusing public and private efforts to protect such land from the impacts and pressures of the nearby urban area as well as to enhance the income potential from agricultural use. In order to protect the Urban Limit Line, no annexations or urban-type development will be allowed in this area. Allowed uses include orchards, row crops, nurseries, grazing lands, open space, packing and shipping facilities, wineries, bed and breakfast inns, u-pick stands, farm equipment repair and services, and parks.

Future Fire or Rail Station - These future facility sites are noted to identify approximate locations to meet future life safety and transit service needs. Exact locations shall be determined in conjunction with future development review of proposed projects in the vicinity of these future facility sites.

TABLE 3.10-6: EXISTING GENERAL PLAN LAND USE DESIGNATIONS

	City		SOI		Planning Area		Total	
Land Use	**Parcels**	**Acreage**	**Parcels**	**Acreage**	**Parcels**	**Acreage**	**Parcels**	**Acreage**
Residential								
Ranchette Estate	145	213.2	17	409.8	1	64.8	163	213.2
Very Low Density Residential	4,618	1,785.5	100	306.0	14	310.2	4,732	2,401.7
Low Density Residential	10,793	2,833.7	7	102.3	2	116.1	10,802	3,052.1
Medium Density Residential	2,643	1,089.0	-	-	-	-	2,643	1,089.0
High Density Residential	433	97.7	-	-	-	-	433	97.7
Very High Density Residential	10	37.9	-	-	-	-	10	37.9
Subtotal	*18,642*	*6,057.0*	*124*	*818.1*	*17*	*491.1*	*18,783*	*7,366.2*
Commercial								
General Commercial	144	217.7	2	4.8	4	26.9	150	249.4
Regional Commercial	32	151.3	-	-	-	-	32	151.3
Subtotal	*176*	*369.0*	*2*	*4.8*	*4*	*26.9*	*182*	*400.7*
Office and Business Parks								
Mixed Use Business Park	171	512.2	-	-	28	495.6	199	1,007.8
Mixed Use Business Park – Res/Com	11	56.9	-	-	-	-	11	56.9
Professional Office	34	70.7	-	-	-	-	34	70.7
Subtotal	216	639.8	-	-	*28*	*495.6*	244	1,135.4
Industrial								
Industrial	18	27.85	62	130.5	11	142.4	91	300.8
Specific Plan								
Downtown Specific Plan	330	86.5	-	-	-	-	330	86.5
Brentwood Boulevard Specific Plan	163	256.0	18	10.6	-	-	181	266.6
Subtotal	*493*	*342.5*	*18*	*10.6*	-	-	*511*	*353.1*

TABLE 3.10-6: EXISTING GENERAL PLAN LAND USE DESIGNATIONS

	City		SOI		Planning Area		Total	
Land Use	**Parcels**	**Acreage**	**Parcels**	**Acreage**	**Parcels**	**Acreage**	**Parcels**	**Acreage**
Parks and Open Space								
Parks/Recreation	47	199.3	-	-	1	3.0	48	202.3
Permanent Open Space	17	24.3	32	41.7	45	2,716.3	94	2,782.3
Subtotal	*64*	*223.6*	*32*	*41.7*	*46*	*2,719.3*	*142*	*2,984.6*
Public and Semi-Public Facilities								
Community College	3	37.8	-	-	-	-	3	37.8
Public Facility	31	162.7	-	-	-	-	31	162.7
Semi-Public Facility	6	32.0	-	-	-	-	6	32.0
Schools	11	115.2	-	-	-	-	11	115.2
Subtotal	*51*	*347.7*	-	-	-	-	*51*	*347.7*
Future Development Area								
Special Planning Area	15	186.1	-	-	18	925.4	33	11,11.5
Urban Reserve	-	-	15	486.0	16	1,196.0	31	1,682.0
Subtotal	*15*	*186.1*	*15*	*486.0*	*34*	*2,121.4*	*64*	*2,793.5*
Agriculture								
Agricultural Conservation	10	29.1	-	-	1,689	15,126.7	1,699	15,155.8
Other								
No Designation	54	232.4	1	6.2	8	41.1	63	279.7
TOTAL	**19,624**	**8,458.7**	**203**	**1,497.9**	**1,779**	**21,164.4**	**21,606**	**31,121.0**

**Parcel totals do not add up due to parcels with multiple land use designations*

Source: City of Brentwood, 2012; De Novo Planning Group, 2012

City of Brentwood Zoning Ordinance

Title 17 of the Brentwood Municipal Code is the City's Zoning Ordinance. The Zoning Ordinance carries out the policies of the General Plan by classifying and regulating the uses of land and structures within the city, consistent with the General Plan. The Zoning Ordinance is adopted to protect and promote the public health, safety, comfort, convenience, prosperity, and general welfare of residents, and businesses in the city. More specifically, the purpose of the Zoning Ordinance is to achieve the following objectives:

A. To promote the achievement of the goals and policies of the Brentwood community development plan and all other more specific City plans and policies elaborated in the context thereof;

B. To advance Brentwood's position as a regional center of commerce, culture, recreation and residential living;

C. To protect each area and neighborhood of the community from the intrusion of incompatible uses and to provide opportunities for establishments to concentrate for efficient operation in a mutually beneficial relationship to each other and to share services;

D. To foster the development of high-quality neighborhoods in a variety of dwelling types and at a wide range of population densities, with full residential amenities and provision for sunlight, fresh air and usable open space;

E. To stabilize expectations regarding future development of Brentwood, thereby providing a basis for wise decisions with respect to such development;

F. To promote the safe, fast and efficient movement of people and goods, and the provision of adequate off-street parking facilities;

G. To promote the growth and productivity of the Brentwood economy;

H. To achieve excellence and originality of design in all future developments and to preserve the natural beauty of Brentwood's setting in the east county region; and

I. To secure equity among individuals in the utilization of their property.

Article II of the Zoning Ordinance includes the City's Zoning Map and provides direction for the interpretation of the Zoning Map. Articles III through VIII define allowable land uses within each zoning district, provide development standards for each zoning district and, where applicable, provide performance standards and identify design criteria. Articles IX and X establish supplementary regulations, include those for landscaping, signage, mobile home parks, affordable housing, agricultural preservation, and large retail uses. Article XI establishes administrative procedure and permit requirements, including design and site development review criteria.

Commercial & Industrial Design Guidelines

The Commercial & Industrial Design Guidelines apply to any nonresidential use and/or building in the city. The Guidelines are intended to accomplish the following:

- Insure that new development relates to good examples of nearby structures;
- Provide visual continuity along street frontages;
- Establish a high level of design quality;
- Maintain a building scale which is consistent with the city's small town, rural heritage;
- Encourage corporate and franchise design to adapt to the unique character of their sites and the city;
- Encourage commercial development to be constructed in patterns which are more pedestrian friendly;
- Reinforce the historic qualities of Downtown Brentwood;
- Convey the City's design expectations to property owners and developers;
- Protect property owner investments by discouraging inappropriate adjacent development; and
- Streamline the development review process by more clearly communicating community expectations to property owners and developers.

The Commercial & Industrial Design Guidelines identify a specific set of criteria for site planning, building design, and signage, as well as for neighborhood commercial uses. In recognition of the distinct characteristics of the Downtown core, Downtown transition zone, and Highway 4 Delta Expressway (State Route 4), a separate set of criteria for site planning, building design, and signage is included for each of these areas.

Residential Design Guidelines

The Residential Design Guidelines apply to new residential subdivision housing, new housing units on individual parcels, residential infill projects in established neighborhoods, additions and exterior renovations to existing residences, and accessory buildings on residential parcels. The Guidelines are intended to accomplish the following:

- Ensure that new development reinforces and supports the scale and character of Brentwood's existing residential neighborhoods;
- Provide guidance to property owners, developers, and their design professionals in planning and designing new subdivisions and individual new homes as well as additions and renovations to existing homes;
- Establish a clear statement of community expectations in order to provide a greater degree of predictability and certainty about design expectations during project review;

- Provide a high level of design quality;
- Encourage a diversity of neighborhood living spaces and residential design;
- Provide a high quality of design in residential areas regardless of density;
- Ensure sensitive transitions between residential areas of differing densities;
- Provide guidance for future home additions and renovations within established neighborhoods; and
- Integrate new infill development into Brentwood's established neighborhoods.

The Residential Design Guidelines establish six basic design principles which provide direction in the event that the guidelines for a specific residential use do not clearly address a given condition. The Guidelines establish criteria specific to eight categories of residential uses: subdivisions, small lot detached single family, duets through fourplexes, townhomes, rowhouses, multifamily, mixed use, and existing neighborhoods. The Guidelines address site development and design, street layout, landscaping, open space, building design, accessory uses, and parking.

Downtown Specific Plan

The Downtown Specific Plan (DSP) provides for the coordination of public and private investment in order to fulfill identified objectives for the Downtown area. The DSP area consists of approximately 205 acres within the city's historic center. The DSP borders are generally Brentwood Boulevard to the north and Fir Street to the south, with the eastern edge defined by parcels having frontage along Third Street as well as the entire Public Facilities area, and the western edge defined by parcels having frontage along Walnut Boulevard.

The intent of the DSP is to guide growth and change in Downtown to ensure it evolves to embody the community's vision for a vibrant, active, and beautiful city district that continues to play an essential role in the daily lives of the city's residents. The DSP establishes the following eight broad objectives:

- *Niche.* Fine tune Downtown's role within the commercial framework of the city and region: selectively guide growth and development in the Downtown district to secure Downtown's role as Brentwood's "main community center (General Plan) within the changing economic landscape of the region being brought about by the construction of the State Route 4 Bypass."
- *Enhanced Draw & Appeal.* Promote the augmentation of existing shopping, eating and entertainment offerings in the district to enable Downtown to effectively coexist with emerging competition at primary access points along the new State Route 4 bypass. Identify and create the conditions to attract the unique retail tenancies critical to Downtown's survival.
- *Critical Mass.* Promote the development of the greater Downtown as the most mixed-use and vibrant district in the city. Increase opportunities to attract people to Downtown, whether it be as their place of residence, place of work, place for shopping

and entertainment, or simply as a central place to gather and to enjoy meeting and interacting with fellow members of the Brentwood community.

- *Civic & Cultural Heart.* Enable the continued expansion of Downtown's role as the civic and cultural heart of the city. Identify and protect opportunities for the widest possible range of civic and cultural facilities and public spaces offered in the Downtown. Enhance the performance of the district for festivals, markets, and other significant civic and cultural events.

- *Access & Walkability.* Continue to enhance the visibility and accessibility of the Downtown from all approaches and via as many modes of travel as possible. Insure that walking is a pleasure throughout the district.

- *Character & Identity.* Ensure that the Downtown is a living example of the aesthetic qualities and characteristics that form the basis of what it means to build in "the Brentwood Way." As the Downtown grows, make certain that the character of new buildings and site improvements draw from the social and cultural aesthetic qualities that furnish this evolving suburb with its well-renowned 'small town' identity.

- *Private Actions: Buildings & Site Improvements.* Promote investment in the development of well-crafted built forms that are both attractive and appropriately scaled for Brentwood's Downtown, which draw from and reinforce the best examples of Brentwood's architectural traditions, and which preserve the city's small town character.

- *Public Actions: Public Spaces.* Guide public investment toward the preservation, enhancement, and increase in variety of public greens, plazas and street spaces to preserve the relaxed setting and pleasing public realm of the Downtown.

Development throughout the DSP core area is intended to focus on small-scale buildings with ground-floor commercial or office uses and primarily residential uses on the upper floors in order to create a vibrant, walkable community core. The DSP envisions continuous ground floor retail along Oak and First Streets. The retail/mixed use core is supported by residential uses to the east, west, and south of Downtown, and the Civic Center and City Park to the north/northeast. The DSP establishes seven districts: Downtown Core, Civic Core, Downtown General, Downtown Boulevard, Western Gateway Neighborhood, Residential Neighborhood, and Brentwood Civic Center.

- *Downtown Core* – designated parcels having frontage on First Street between Chestnut and Maple Streets, on Oak Street between Brentwood Boulevard and Second Street, and on Second Street between Oak and Maple Streets.

- *Civic Core* – designated parcels having frontage on Oak Street between Second and Fourth Streets, on Third Street along City Park, and on Maple Street along City Park.

- *Downtown General* – designated parcels having frontage on First and Second Streets between Maple and Pine Streets.

- *Downtown Boulevard* – designated parcels having frontage on Brentwood Boulevard throughout the Specific Plan project area, on Pine Street between Brentwood Boulevard and Diablo Way, on Birch Street between Brentwood Boulevard and Diablo

Way, on Elm Street between Brentwood Boulevard and Diablo Way, on Peachtree Court between Brentwood Boulevard and Diablo Way, and on Fir Street between Brentwood Boulevard and Diablo Way.

- *Western Gateway Neighborhood* – designated parcels having frontage on Walnut Boulevard within the Specific Plan project area.

- *Residential Neighborhood* – designated parcels having frontage on Second Street between Oak and Chestnut Streets, on Chestnut Street between Second Street and Midway, on First Street between Chestnut Street and Birch Street, and on Birch Street between First Street and Diablo Way.

- *Brentwood Civic Center* – designated parcel having frontage on Oak Street from Second Street to a point midway between Third and Fourth Streets, and on Second Street from Oak Street to City Park Way.

The DSP includes an overall Development Strategy, which includes prioritized strategies and an implementing framework, to achieve the vision for the Downtown. Development regulations, including design standards and guidelines, are established to govern all future private development actions within the DSP area. The development regulations include: Site Development Standards, Street and Open Space Standards and Guidelines, Parking Standards and Guidelines, and Architectural Standards and Guidelines.

Brentwood Boulevard Specific Plan

The Brentwood Boulevard Specific Plan (BBSP) provides long-term policy guidance needed to revitalize and improve a significant portion of Brentwood Boulevard and to recognize the opportunities for change as the corridor transitions from a rural State route to a local mixed-use arterial roadway. The vision for the BBSP is to transform the existing auto-oriented corridor into a more traditional boulevard with distinctive, unique, front-facing buildings. The BBSP area covers approximately 310 acres and includes properties on the east and west sides of Brentwood Boulevard from Delta Road on the north to Second Street on the south.

The BBSP identifies the following broad goals to revitalize and enliven Brentwood Boulevard and create prosperous live/work areas:

- Design and implement a traditional boulevard corridor along Brentwood Boulevard (former State Route 4) between Delta Road and Second Street, characterized by a vibrant mix of complementary land uses, distinctive architecture, lush mature landscaping, infrastructure improvements, and streetscape enhancement features.

- Create an attractive and inviting link between the northeast entrance to the city and the city's Downtown area, accessible by a variety of travel modes.

- Improve the quality of life for residential neighborhoods both within and adjacent to the BBSP area by providing compatible development design, better access to public services, infrastructure upgrades, and additional parks and other improved open space.

- Transform the historical auto-oriented "strip commercial" land use patterns by prohibiting that type of development in the future and by requiring a vibrant mix of workplace and residential land uses easily accessible by pedestrians, bicyclists, and transit riders as well as motor vehicle drivers.

- Create safe and convenient circulation along the Brentwood Boulevard corridor and connecting streets and enhanced access for pedestrians, bicyclists, transit riders, and motor vehicle drivers.

- Enhance the compatibility and transitions between existing and future land uses both within and adjacent to the BBSP area to promote harmonious and prosperous live/work areas.

- Stimulate and encourage the revitalization and/or improvement of existing land uses, including buildings, landscaping, access points, and parking areas.

- Ensure consistency with other adopted citywide policy documents, including but not limited to the General Plan, the Parks, Trails & Recreation Master Plan, and the Infrastructure Master Plan.

- Create conditions that will attract economic investment.

- Create a unique area that provides a blend of new employment and housing opportunities serving city residents and visitors.

In support of its goals, the BBSP establishes a policy framework addressing the following topics: Land Use Compatibility, Complementary Land Uses, Land Use Transitions, Distinctive Architecture, Mature Landscaping, Streetscape Enhancement and Signage, Infrastructure, Parks and Open Space, Compatible Development Design, Transportation Access, Economic Investment, Air Quality, Community/Neighborhood Entries, and Street Amenities and Lighting.

The following six land use districts are established by the BBSP. Development standards and allowed uses are designated for each district.

- *Medium Density Residential* - This district is intended to expand housing choice, recognize existing residential uses, and provide compatible new housing opportunities adjacent to or within established residential areas. A wide range of housing types are allowed within a density range from five to 11 dwelling units per gross acre.

- *High Density Residential* - This district is intended to expand housing choice and provide a convenient living option immediately adjacent to employment, services, and public amenities. This district allows multifamily dwellings within a density range from 11 to 20 dwelling units per gross acre.

- *Commercial/Office/Industrial/Residential* - This district is intended to provide a transition between employment areas and residential areas located primarily near the Downtown, and to serve as an attractive gateway to the Downtown. A wide range of uses are allowed in order to meet neighborhood needs that complement and strengthen the historic Downtown area and the area north of Grant Street/Sunset Road. The primary land use in this district should be high density residential, with a

density range from 11 to 20 dwelling units per acre, while commercial, office, and light industrial development is also allowed.

- *Commercial/Office/Industrial* - This district is intended to provide a mixed-use neighborhood-serving employment area in close proximity to residential and non-residential uses north of Lone Tree Way that will enhance the economic health of the BBSP area. The primary land use in this category should be office and industrial, while commercial (i.e., retail) development is also allowed.

- *General Commercial* - This district is intended to expand the mix and range of retail services for existing and future residents within the BBSP. Neighborhood-serving retail commercial activity hubs are located at arterial roadway intersections within the BBSP to meet neighborhood shopping and local consumer service needs.

- *Open Space* - This district is intended to meet the recreation and public open space needs of Brentwood residents, workers, and visitors consistent with the provisions of both the General Plan and the Parks, Trails & Recreation Master Plan. A variety of recreation and visual amenities that support and promote physical activity, personal comfort and enjoyment, socializing, decreased automobile dependence for local trips, and restoration of biological resources and/or wildlife habitat are envisioned.

Local Agency Formation Commission of Contra Costa County

In 1963, the State Legislature created a local agency formation commission (LAFCO) for each county, with the authority to regulate local agency boundary changes. Subsequently, the State has expanded the authority of a LAFCO. The goals of a LAFCO include preserving agricultural and open space land resources and providing for efficient delivery of services. The Contra Costa LAFCO has authority over land use decisions in Contra Costa County affecting local agency boundaries. Its authority extends to the incorporated cities, including annexation of County lands into a city, and special districts within the County. LAFCO has the authority to review and approve or disapprove the following:

- Annexations to or detachments from cities or districts.
- Formation or dissolution of districts.
- Incorporation or disincorporation of cities.
- Consolidation or reorganization of cities or districts.
- Extensions of service beyond an agency's jurisdictional boundaries.
- Development of, and amendments to, Spheres of Influence (SOI). The SOI is the probable physical boundary and service area of each local government agency. This may extend beyond the current service area of the agency.
- Provision of new or different services by districts.

In addition, LAFCO conducts Municipal Service Reviews (MSRs) for services within its jurisdiction. An MSR typically includes a review of existing municipal services provided by a local agency and its infrastructure needs and deficiencies. It also evaluates financing constraints and opportunities,

management efficiencies, opportunities for rate restructuring and shared facilities, local accountability and governance, and other issues.

Legislation, including Assembly Bill 1555 and Senate Bill 244, has been enacted to encourage the identification and annexation of islands, which are unincorporated areas substantially surrounded by a city or cities. As part of Contra Costa LAFCO's charges of encouraging logical and orderly agency boundaries to promote the efficient extension of municipal services, Contra Costa LAFCO has identified 16 islands that result in service confusion and inefficiencies as candidates for annexation. The following two islands are located within the City's SOI.

Island T – An approximately 140-acre area of unincorporated land substantially surrounded (98%) by the cities of Oakley and Brentwood. This island is located where Lone Tree Way intersects with Virginia Drive west of Brentwood Boulevard. Land uses include residential, commercial and agricultural.

Island U – An approximately 151-acre area of unincorporated land substantially surrounded (85%) by the city of Brentwood. This island is bounded by Delta Road to the north and Brentwood Boulevard to the west. The area is largely undeveloped. Land uses include limited residential and active agricultural (prime farmland).

Measure J

Measure J, approved by Contra Costa County voters in November 2004, provides for the continuation of a half-cent transportation sales tax until 2034. The funds generated from the tax will be used for projects and programs as set forth in the voter-approved Expenditure Plan. Measure J requires each jurisdiction in Contra Costa County to comply with all of the following components of its Growth Management Program:

- Adopt a Growth Management Element;
- Adopt a Development Mitigation Program;
- Participate in a Cooperative, Multi-Jurisdictional Planning Process to Reduce Cumulative Regional Traffic Impacts of Development;
- Address Housing Options;
- Develop a Five-Year Capital Improvement Program;
- Adopt a Transportation Systems Management Ordinance or Resolution; and
- Adopt an Urban Limit Line. Cities that do not adopt a ULL default to the voter-approved Countywide ULL, adopted under Measure C in 1990.

Contra Costa County Airport Land Use Compatibility Plan

In December 2000, the Contra Costa County Airport Land Use Commission adopted the Airport Land Use Compatibility Plan (ALUCP), which sets forth the "referral area boundaries" around each airport in the County and the limits on land use, building height, and population density in those areas. The ALUCP regulates land use in three major areas: safety zones, noise zones, and height restrictions. It provides land use compatibility guidelines for lands near the airport, to avert potential safety problems and to ensure unhampered airport operations. The ALUCP establishes three safety zones that are linked to land use compatibility: clear, approach/departure, and overflight.

Under California Government Code Section 65302.3(a), general plans must be consistent with any airport land use plan adopted pursuant to Public Utilities Code Section 21675. The Byron Field Airport is the closest airport to Brentwood. Lands within the City of Brentwood, the City's SOI, and the Planning Area are not located within any of the airport influence areas identified in the ALUCP.

Contra Costa County General Plan

Contra Costa County adopted its General Plan on January 18, 2005. The County's General Plan provides a comprehensive set of goals, policies, and implementing actions to guide the County's growth through the year 2020. The County's General Plan includes the following elements:

- Land Use
- Growth Management
- Circulation and Transportation
- Housing
- Public Facilities/Services
- Conservation
- Open Space
- Safety
- Noise

The County's General Plan establishes allowed land uses for lands within the City's SOI and Planning Area. While the City of Brentwood General Plan Land Use Map identifies planned land uses within the SOI and Planning Area, Contra Costa County has ultimate land use planning and project approval authority within the SOI and Planning Area unless the lands are annexed to the City. The County's land use designations for areas within the Sphere of Influence are summarized in Table 3.10-7 and the County's land use designations for the unincorporated area around the City are shown on Figure 3.10-4.

TABLE 3.10-7: CONTRA COSTA COUNTY LAND USE DESIGNATIONS IN SOI		
LAND USE	PARCELS	ACREAGE
Sphere of Influence		
Agricultural Lands	50	1,280.6
Commercial	7	4.8
Parks & Recreation	1	23.0
Public/Semi-Public	3	35.1
Single Family - High Density	13	7.5
Single Family - Low Density	130	146.9
TOTAL	**203***	**1,497.9**

**Total does not add up due to parcel split with multiple designations*

Source: Contra Costa County, 2012; De Novo Planning Group, 2012

3.10.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on land use and population if it will:

- Physically divide an established community;
- 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;
- Conflict with any applicable habitat conservation plan or natural community conservation plan;
- Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Potential conflicts with any applicable habitat conservation plan or natural community conservation plan are discussed in Section 3.4 (Biological and Natural Resources).

IMPACTS AND MITIGATION MEASURES

Impact 3.10-1: General Plan implementation has the potential to physically divide an established community (Less than Significant)

The proposed General Plan establishes the City's vision for future growth and development. Goal LU 1 of the General Plan is to "*Establish a land use pattern in Brentwood that provides for a diverse, self-sufficient community that offers a broad spectrum of job opportunities, housing types, community facilities, and commercial services.*" The land uses allowed under the proposed General Plan (Figure 2.0-3) provide opportunities for cohesive new growth at in-fill locations within existing urbanized areas of the city, as well as new growth adjacent to existing urbanized areas, but would not create physical division within the community. New development and redevelopment projects would be designed to complement the character of the existing community and neighborhoods and provide connectivity between existing development and new development. The proposed General Plan Land Use Map designates sites for a range of urban and rural developed uses as well as open space. The proposed General Plan does not include any new areas designated for urbanization or new roadways, infrastructure, or other features that would divide existing communities. The proposed General Plan would have a **less than significant** impact associated with the physical division of an established community.

Impact 3.10-2: General Plan implementation has the potential to conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted to avoid or mitigate an environmental effect (Less than Significant)

STATE PLANS: The proposed General Plan was prepared in conformance with State laws and regulations associated with the preparation of general plans, including requirements for environmental protection. Discussion of the proposed General Plan's consistency with State regulations, plans, and policies associated with specific environmental issues (e.g., air quality, traffic, water quality, etc.) is provided in the relevant chapters of this Draft EIR. The State would continue to have authority over any State-owned lands in the vicinity of the city and the proposed General Plan would not conflict with continued application of State land use plans, policies, and regulations adopted to avoid or mitigate environmental effects.

CITY PLANS: As set forth by State law, the General Plan serves as the primary planning document for the City and subordinate documents and plans would be updated to be consistent with the General Plan. Similar to the existing General Plan, the 2014 General Plan focuses on ensuring that the city's quality of life is maintained, that increased opportunities for local job growth and economic development are provided, that agricultural and conservation uses and activities are maintained and enhanced within the Planning Area, and that the majority of growth remains focused within the city limits. The proposed General Plan carries forward and enhances policies and measures from the City's existing General Plan that were intended for environmental protection and would not remove or conflict with City plans, policies, or regulations adopted for environmental protection. The proposed General Plan would require modifications to the City's Zoning Ordinance to provide consistency between the General Plan and zoning; however, these modifications will not remove or adversely modify portions of the Brentwood Municipal Code that

were adopted to mitigate an environmental effect. The proposed General Plan is consistent with the adopted Downtown Specific Plan and Brentwood Boulevard Specific Plan and has been designed to encourage implementation of those specific plans.

Subsequent development projects would be required to be consistent with all applicable policies, standards, and regulations, including those land use plans, policies, and regulations adopted to mitigate environmental effects by the City as well as those adopted by agencies with jurisdiction over components of future development projects. Any potential environmental impact associated with conflicts with land use requirements would be **less than significant**.

The proposed project could result in potential adverse environmental impacts, including those related to traffic, noise, water quality, biological resources, aesthetics, agricultural resources, drainage and water quality, air quality, hazards, geology/soils, and cultural resources. Impacts to these resources, including consistency with applicable plans, policies, and regulations, are evaluated in the appropriate sections of this EIR.

Impact 3.10-3: General Plan implementation has the potential to induce substantial population growth (Less than Significant)

The proposed General Plan accommodates future growth in Brentwood, including new businesses, expansion of existing businesses, and new residential uses. Infrastructure and services would need to be extended to accommodate future growth. At full buildout, the proposed General Plan would accommodate approximately 9,972 new housing units and 9,896,951 square feet of new non-residential building square footage within the city limits, as shown in Table 2.0-2 in Chapter 2.0. This new growth may increase the city's population by approximately 27,639 residents.[1] The full development of the new non-residential building square footage, which includes commercial, office, and industrial uses, may increase the employment opportunities in Brentwood by approximately 21,232 employees,[2] as shown in Table 2.0-3.

As shown in Table 2.0-2, buildout of the General Plan could yield up to 3,642 new housing units and 2,994,116 square feet of new non-residential building square footage within the Planning Area. The total combined buildout growth within the city limits and the Planning Area could yield up to 13,614 new housing units, 12,891,067 square feet of new non-residential uses, and new population growth of up to 39,058 persons.

As shown in Table 2.0-3, full buildout of the proposed General Plan Land Use Map within the city limits would result in a total population of 80,917, which is lower than the population projection of the existing General Plan Land Use Map. Full buildout within the Planning Area would result in a

[1] Assumes 3.22 persons per household in new detached single-family residential units, and 2.38 persons per household in new multi-family residential units.

[2] Assumes one employee generated for: every 350 square feet of commercial space, every 295 square feet of office space, and every 575 square feet of industrial space.

total population of 92,336, which is lower than the population projections of the existing General Plan Land Use Map.

Depending on growth rates, the actual growth during the life of the General Plan could be lower or higher, but would not exceed the theoretical buildout described in Chapter 2.0.

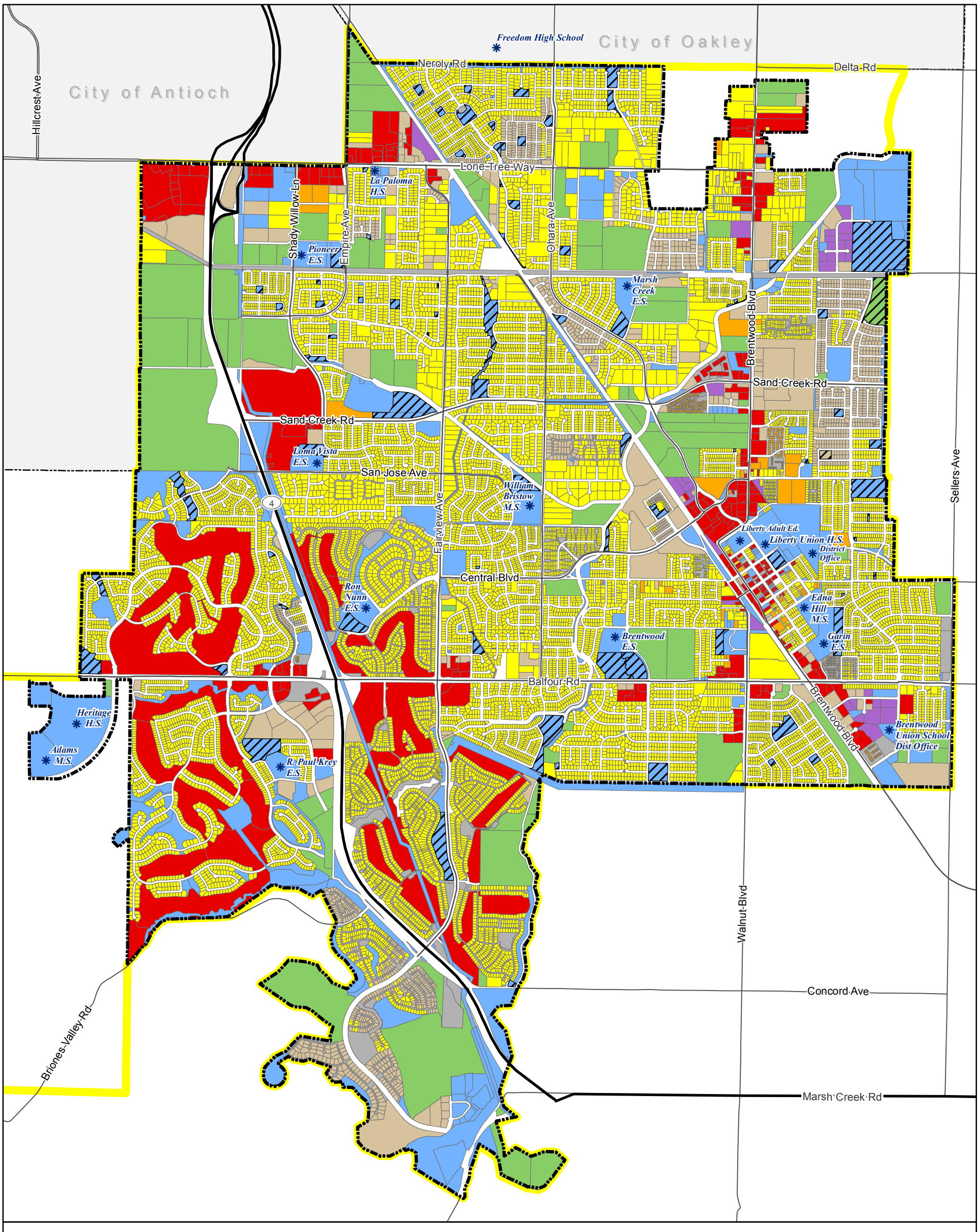
Given the historical and current population, housing, and employment trends, growth in the city, as well as the entire state, is inevitable. The primary factors that account for population growth are natural increase and net migration. The average annual birth rate for California is expected to be 20 births per 1,000 population. Additionally, California is expected to attract more than one third of the country's immigrants. Other factors that affect growth include the cost of housing, the location of jobs, the economy, the climate, and transportation. While these factors would likely result in growth in Brentwood during the planning period of the proposed General Plan, growth will continue to occur based primarily on the demand of the housing market and demand for new commercial, industrial, and other non-residential uses. As future development occurs under the proposed General Plan, new roads, infrastructure, and services would be necessary to serve the development, and this infrastructure would accommodate planned growth. However, growth under the proposed General Plan would remain within the general growth levels projected statewide and would not be anticipated to exceed any applicable growth projections or limitations that have been adopted to avoid an environmental effect. The proposed General Plan is intended to accommodate the City's fair share of statewide housing needs, which are allocated by the Association of Bay Area Governments, based on regional numbers provided by the California Department of Housing and Community Development on a regular basis (every five to eight years).

The proposed General Plan includes policies and actions that mitigate environmental impacts associated with growth, such as air quality, noise, traffic, water supply, and water quality effects. Additionally, this Draft EIR includes mitigation measures, where appropriate, to reduce or eliminate potentially significant impacts associated with specific environmental issues associated with growth. Chapters 3.1 through 3.9 and 3.11 through 4.0 provide a discussion of environmental effects associated with development allowed under the proposed General Plan.

With implementation of General Plan policies and actions intended to guide growth to appropriate areas and provide services necessary to accommodate growth, the land uses allowed under the proposed General Plan, the infrastructure anticipated to accommodate proposed land uses, and the goal and policy framework would not induce growth that would exceed adopted thresholds. Therefore, population and housing growth associated with the proposed General Plan would result a **less than significant** impact.

Impact 3.10-4: General Plan implementation does not have the potential to displace substantial numbers of people or existing housing (less than significant)

While the proposed General Plan does not directly propose any development, it would allow for the development and redevelopment of lands within the city that are currently occupied by people and existing housing units. Residences may be removed as part of future development activities allowed under the proposed General Plan; however, the proposed General Plan would accommodate approximately 9,972 new housing units in the city limits, and 3,642 new housing units in the Planning Area, which would provide adequate replacement housing opportunities for any displacement that occurs. Further, any residence that would be removed as part of future development would be purchased prior to any development. While the proposed General Plan may result in development that would remove residences, development allowed under the General Plan would result in an increase in the total number of residences and provide housing opportunities for persons that may be displaced as a result of development. This provision of replacement "housing opportunities" is essentially a self-mitigating aspect as a result of implementation of the proposed General Plan. Therefore, impacts of the proposed General Plan on the displacement of people or housing are considered **less than significant**.



Single Family Residential
Multifamily Residential
Commercial
Industrial
Institutional
Agricultural and Land
Vacant
Miscellaneous

Brentwood City Boundary
Brentwood Sphere of Influence
Existing Parks
Schools

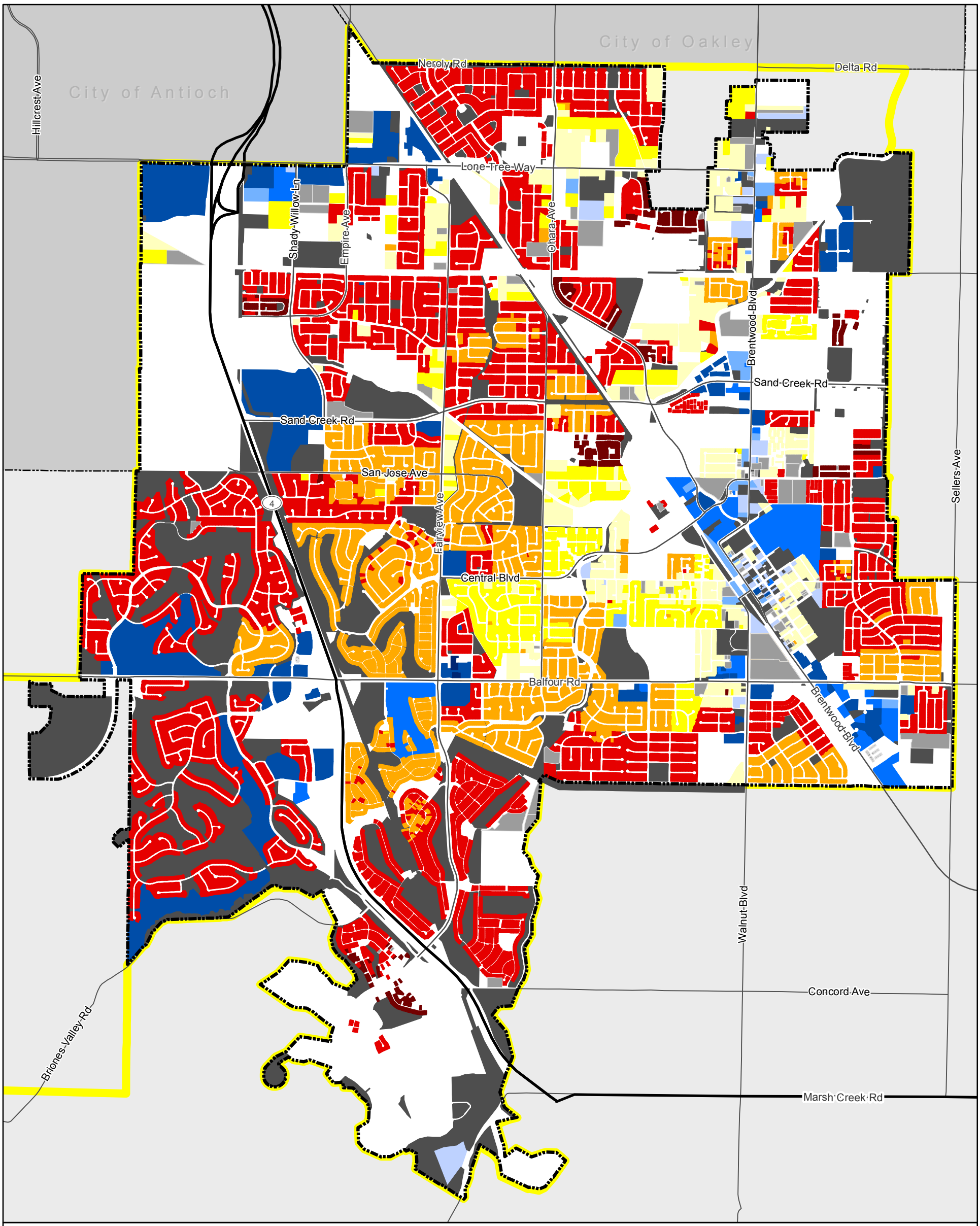
CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.10-1: Assessed Land Uses

0 1,250 2,500
Feet

Data sources: City of Brentwood GIS, Contra Costa County GIS, ESRI StreetMap North America. Map date: February 23, 2013.

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm



Parcel Development Time Period

Residential Parcels	Commercial, Industrial, or Institutional Parcels
Pre-1976	Pre-1976
1976-1989	1976-1989
1990-1999	1990-1999
2000-2009	2000-2009
2010-Now	2010-Now
No Info	No Info

Planning Areas

Brentwood City Boundary

Brentwood Sphere of Influence

Data sources: City of Brentwood GIS, Contra Costa County GIS, ESRI StreetMap North America. Map date: February 25, 2013.

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.10-2: Development Trends

0 1,250 2,500
Feet

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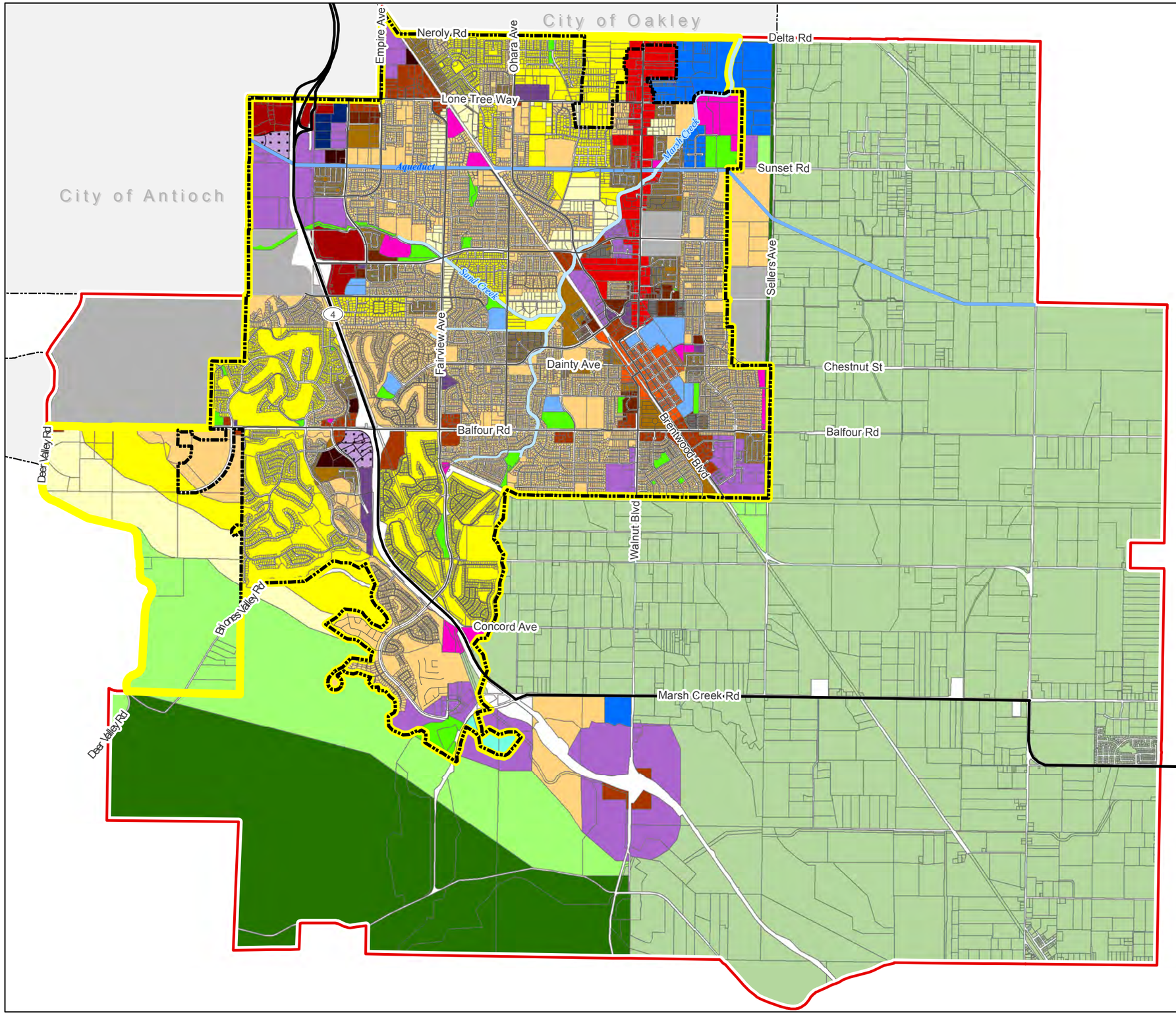
A Land Use Planning, Design, and Environmental Firm

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.10-3: City of Brentwood Existing General Plan Land Use Designations



- AGCON - Ag Conservation
- UR - Urban Reserve
- P-OS - Permanent Open Space
- I - Industrial
- GC - General Com
- RC - Regional Com
- PO - Professional Office
- MU-BP - Mixed Use Business Park
- MU-BP-R-C - mixed use/business park/res/com
- BB - Brentwood Blvd Spec Plan
- D - Downtown Specific Plan
- PF - Public Facility
- SPF - Semi-Pubic Facility
- P - Park
- RE - Ranchette Estate
- R-VLD - Res Very Low Dens
- R-LD - Res Low Dens
- R-MD - Res Medium Dens
- R-HD - Res High Dens
- R-VHD - Res Very High Dens
- SCH - Existing School
- CC - community college
- SPA - Special Plan Area

Planning Areas

- Brentwood City Limits
- Brentwood Sphere of Influence
- Brentwood Planning Area

0 0.5 1
Miles

Data sources: City of Brentwood GIS, Contra Costa County GIS, ESRI StreetMap North America. Map date: February 11, 2013.

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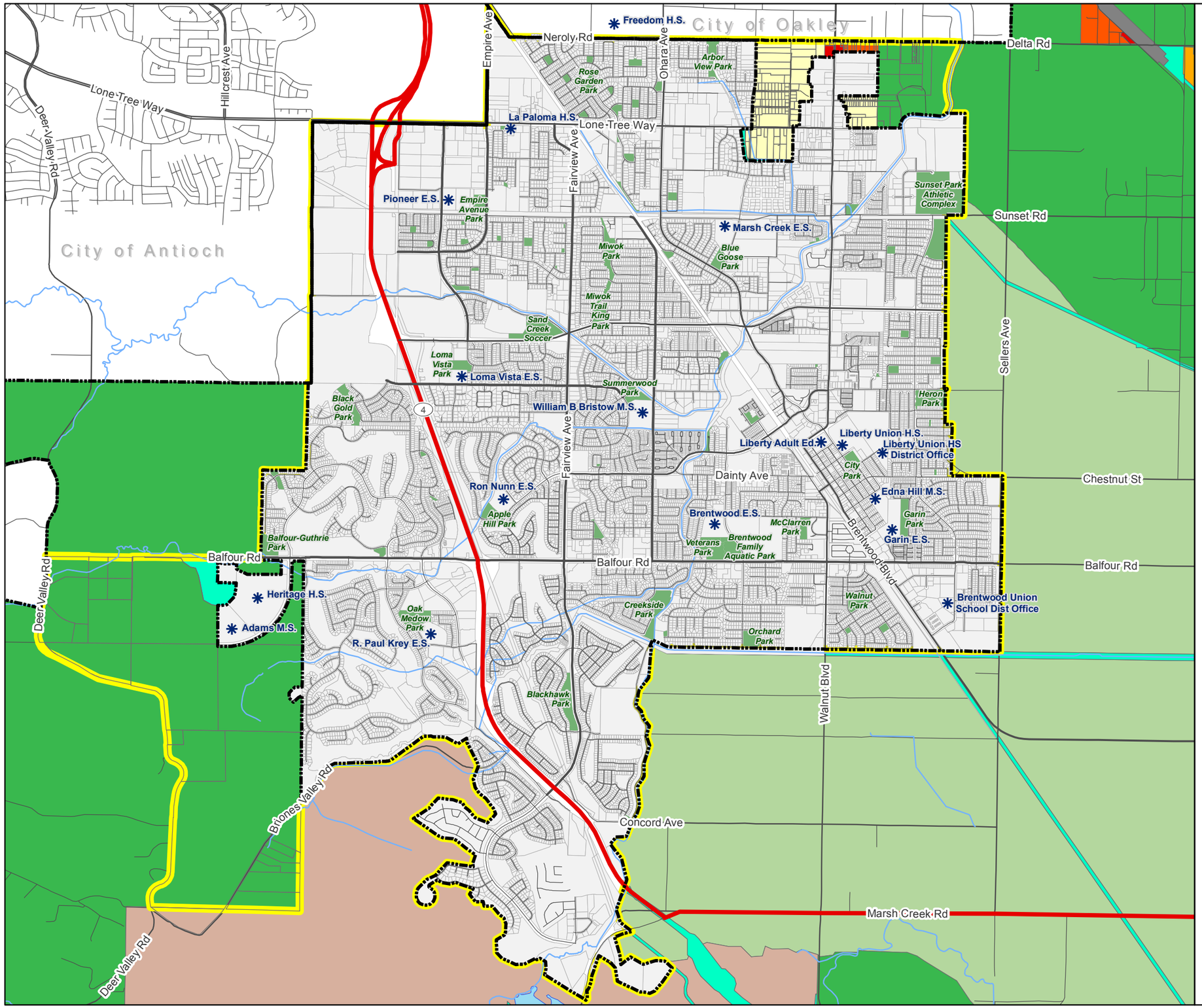
CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.10-4: Contra Costa County General Plan Land Use Designations



Contra Costa County General Plan Designation

- Agricultural Core
- Agricultural Lands
- Commercial
- Light Industry
- Parks and Recreation
- Public and Semi-Public
- Single-Family Residential - Low Density
- Single-Family Residential - Medium Density
- Single-Family Residential - High Density
- Water

Planning Areas

- City Limits
- Brentwood Sphere of Influence

Landmarks

- Schools
- Parks

0 0.5 1
Miles

Data sources: City of Brentwood GIS, Contra Costa County GIS, ESRI StreetMap North America. Map date: February 4, 2013.

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

This section provides a discussion of the regulatory setting, a general description of existing noise sources in Brentwood, and a discussion of the impacts and mitigation measures associated with implementation of the proposed General Plan. The analysis in this section was prepared with assistance from j.c. brennan & associates, Inc. The technical data in support of this EIR section is presented in Appendix C.

3.11.1 ENVIRONMENTAL SETTING

KEY TERMS

Acoustics The science of sound.

Ambient Noise The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.

Attenuation The reduction of noise.

A-Weighted, 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.

CNEL The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.

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 sound in air is 20 micro-pascals.

Frequency, Hz The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sounds are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.

Intrusive That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

L_{dn} The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.

L_{eq} The average A-weighted noise level during the measurement period.

L_{max}/L_{min} The maximum and minimum A-weighted noise levels during the measurement period.

$L_{(n)}$	The A-weighted noise levels that are exceeded n% of the time during the measurement period.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
SEL	A rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro-pascals (or 20 micro Newtons 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 micro-pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.

FUNDAMENTALS OF ACOUSTICS

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micro-pascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of

10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is "half as loud" as an 80 dBA sound, and "twice as loud" as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptors L_{dn} and CNEL, and shows very good correlation with community response to noise.

The day/night average level (L_{dn}) is based upon the average noise level over a 24-hour day, with a +10 decibel weighting applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it de-emphasizes short-term variations in the noise environment. CNEL is similar to L_{dn}, but includes a +5 dB penalty for evening noise. Table 3.11-1 lists several examples of the noise levels associated with common situations.

TABLE 3.11-1: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	NOISE LEVEL (DBA)	COMMON INDOOR ACTIVITIES
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft)	--100--	
Gas Lawn Mower at 1 m (3 ft)	--90--	
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	--80--	Food Blender at 1 m (3 ft) Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft)	--70--	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	--60--	Normal Speech at 1 m (3 ft)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

SOURCE: CALTRANS, TECHNICAL NOISE SUPPLEMENT, TRAFFIC NOISE ANALYSIS PROTOCOL. NOVEMBER 2009.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction;
- Interference with activities such as speech, sleep, and learning; and

- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

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 the 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 50 dBA L_{dn}. At an L_{dn} of about 60 dBA, approximately 12 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 25-30 percent of the population. There is an increase of about two percent per dBA between an L_{dn} of 60-70 dBA. Between an L_{dn} of 70-80 dBA, each decibel increase results in about a three percent increase of the population being highly annoyed. People appear to respond more adversely to aircraft noise. When the L_{dn} is 60 dBA, approximately 30-35 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about three percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a four percent increase in the percentage of the population highly annoyed.

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 noise standards for multi-family dwellings and other attached housing including transient occupancies are set by the State at 45 dBA L_{dn}. Typically, the highest steady traffic noise level during the daytime is about 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, rooms facing secondary roadways need to be able to have their windows and doors closed, while those facing major roadways and freeways typically need special windows and doors with a high sound attenuation rating.

FUNDAMENTALS OF VIBRATION

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several methods are typically used to quantify the amplitude of vibration, including Peak Particle Velocity (PPV) and Root Mean Square (RMS) velocity. PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. RMS velocity is defined as the average of the squared amplitude of the signal. PPV is normally used to evaluate structural damage, while PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

Low-level vibrations can cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where ground-borne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

In suburban environments, such as Brentwood, sources of ground-borne vibration include construction activities, rail transit, and heavy trucks and buses.

CONSTRUCTION VIBRATION

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 ground-borne vibration levels. Because of the impulsive nature of such activities, the use of the peak particle velocity descriptor (PPV) has been routinely used to measure and assess ground-borne vibration and almost exclusively to assess the potential of vibration to induce structural damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Studies have shown that the threshold of perception for average persons is in the range of 0.2 to 0.3 mm/sec (0.008 to 0.012 inches/sec), PPV. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels such as people in an urban environment may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as minor cracking of building elements, or may threaten the integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher and there is no general consensus as to what amount of vibration may pose a threat for structural damage to the building. Construction-induced vibration that can be detrimental to a building is very rare and has only been observed in instances where the structure is in a high state of disrepair and the construction activity (e.g., impact pile driving) occurs immediately adjacent to the structure.

Table 3.11-2 displays continuous vibration impacts on human annoyance and on buildings. As discussed previously, annoyance is a subjective measure and vibrations may be found to be annoying at much lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying.

TABLE 3.11-2: REACTION OF PEOPLE AND DAMAGE TO BUILDINGS FOR CONTINUOUS VIBRATION LEVELS

VELOCITY LEVEL, PPV (IN/SEC)	HUMAN REACTION	EFFECT ON BUILDINGS
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Virtually no risk of damage to normal buildings
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential dwellings such as plastered walls or ceilings
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to newer residential structures

SOURCE: TRANSPORTATION- AND CONSTRUCTION-INDUCED VIBRATION GUIDANCE MANUAL, CALIFORNIA DEPARTMENT OF TRANSPORTATION, JUNE 2004.

LIGHT-RAIL/ HEAVY-RAIL VIBRATION

Rail operations are potential sources of substantial ground-borne vibration depending on distance, the type and the speed of trains, and the type of railroad track. People's response to ground-borne 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 x 10-6 in. /sec. RMS, which equals 0 VdB, and 1 in. /sec. equals 120 VdB. Although not a universally accepted notation, the abbreviation "VdB" is used in this document for vibration decibels to reduce the potential for confusion with sound decibels.

Typical background vibration levels in residential areas are usually 50 VdB or lower, well below the threshold of perception for most humans. Perceivable vibration levels inside residences are attributed to

the operation of heating and air conditioning systems, door slams, and foot traffic. Construction activities (in particular, pile driving for taller buildings in certain soil conditions), train operations, and street traffic are some of the most common external sources of perceptible vibration inside residences. Table 3.11-3 identifies some common sources of vibration, corresponding VdB levels, and associated human perception and potential for structural damage.

TABLE 3.11-3: LEVELS OF GROUNDBORNE VIBRATION

HUMAN/STRUCTURAL RESPONSE	VELOCITY LEVEL, VDB	TYPICAL EVENTS (AT 50 FEET)
Threshold, minor cosmetic damage	100	Blasting, pile driving, vibratory compaction equipment, heavy tracked vehicles (bulldozers, cranes, drill rigs)
Difficulty with tasks such as reading a video or computer screen	90	Commuter rail, upper range
Residential annoyance, infrequent	80	Rapid transit, upper range
Residential annoyance, occasional		Commuter rail, typical bus or truck over bump or on rough roads
Residential annoyance, frequent	70	Rapid transit, typical
Approximate human threshold of perception to vibration	60	Buses, trucks and heavy street traffic Background vibration in residential settings in the absence of activity
Lower limit for equipment ultra-sensitive to vibration	50	

SOURCE: TRANSIT NOISE AND VIBRATION IMPACT ASSESSMENT, US DEPARTMENT OF TRANSPORTATION FEDERAL TRANSIT ADMINISTRATION, MAY 2006.

One of the problems with developing suitable criteria for ground-borne vibration is the limited research into human response to vibration and, more importantly, human annoyance inside buildings. The U.S. Department of Transportation (Federal Transit Administration) has developed rational vibration limits that can be used to evaluate human annoyance to ground-borne vibration. These criteria are primarily based on experience with passenger train operations, such as rapid transit and commuter rail systems. The main difference between passenger and freight operations is the time duration of individual events; a passenger train lasts a few seconds, whereas a long freight train may last several minutes, depending on speed and length.

HEAVY TRUCKS AND BUSES

Ground-borne vibration levels from heavy trucks and buses are not normally perceptible, especially if roadway surfaces are smooth. Buses and trucks typically generate ground-borne vibration levels of about 63 VdB at a distance of 25 feet when traveling at a speed of 30 mph. 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 generally below the threshold for human perception.

EXISTING NOISE LEVELS

Traffic Noise Levels

The FHWA Highway Traffic Noise Prediction Model (FHWA-RD 77-108) was used to develop Ldn (24-hour average) noise contours for all highways and major roadways in the General Plan study area. The model is based upon the CALVENO noise emission factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver and the acoustical characteristics of the site. The FHWA Model predicts hourly Leq values for free-flowing traffic conditions, and is generally considered to be accurate within 1.5 dB. To predict Ldn values, it is necessary to determine the hourly distribution of traffic for a typical 24-hour period.

Existing traffic volumes were obtained from the traffic modeling performed for the General Plan study area. Day/night traffic distributions were based upon continuous hourly noise measurement data and j.c. brennan & associates, Inc. file data for similar roadways. Caltrans vehicle truck counts were obtained for SR 4. Using these data sources and the FHWA traffic noise prediction methodology, traffic noise levels were calculated for existing conditions. Table 3.11-4 shows the results of this analysis.

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each project-area roadway segments. In some locations sensitive receptors may be located at distances which vary from the assumed calculation distance and may experience shielding from intervening barriers or sound walls. However, the traffic noise analysis is believed to be representative of the majority of sensitive receptors located closest to the project-area roadway segments analyzed in this report.

The actual distances to noise level contours may vary from the distances predicted by the FHWA model due to roadway curvature, grade, shielding from local topography or structures, elevated roadways, or elevated receivers. The distances reported in Table 3.11-4 are generally considered to be conservative estimates of noise exposure along roadways in the City of Brentwood.

TABLE 3.11-4: PREDICTED EXISTING TRAFFIC NOISE LEVELS

ROADWAY	SEGMENT	NOISE LEVEL AT SENSITIVE RECEPTORS (DB, LDN)[1]	DISTANCES TO TRAFFIC NOISE CONTOURS, LDN (FEET)		
			70 DB	65 DB	60 DB
Second Street	West of Brentwood Boulevard	57.0	26	55	118
Second Street	East of Brentwood Boulevard	57.0	38	82	177
Anderson Lane	North of Lone Tree Way	53.0	71	152	328
Anderson Lane	South of Lone Tree Way	50.5	59	128	275
Balfour Road	Deer Valley Road to American Avenue	62.1	24	51	111
Balfour Road	American Avenue to Foothill Drive	60.2	19	41	89
Balfour Road	Foothill Drive to John Muir Parkway	61.6	32	68	147

TABLE 3.11-4: PREDICTED EXISTING TRAFFIC NOISE LEVELS

ROADWAY	SEGMENT	NOISE LEVEL AT SENSITIVE RECEPTORS (DB, LDN)[1]	DISTANCES TO TRAFFIC NOISE CONTOURS, LDN (FEET)		
			70 DB	65 DB	60 DB
Balfour Road	John Muir Parkway to Eagle Rock Avenue	65.3	31	67	144
Balfour Road	Eagle Rock Avenue to SR 4	66.6	3	6	14
Balfour Road	SR 4 to Fairview Avenue	62.7	4	8	18
Balfour Road	Fairview Avenue to Minnesota Avenue	62.1	9	20	42
Balfour Road	Minnesota Avenue to Griffith Lane	61.4	7	16	34
Balfour Road	Griffith Lane to Walnut Boulevard	62.1	6	13	28
Balfour Road	Walnut Boulevard to Brentwood Boulevard	59.8	45	97	208
Balfour Road	East of Brentwood Boulevard	56.1	21	44	95
Brentwood Boulevard	North of Lone Tree Way	62.5	19	41	88
Brentwood Boulevard	Lone Tree Way to Sunset Road	63.3	19	41	88
Brentwood Boulevard	Sunset Road to Sand Creek Road	63.2	9	20	43
Brentwood Boulevard	Sand Creek Road to Central Boulevard	61.5	11	24	51
Brentwood Boulevard	Central Boulevard to Second Street	58.0	6	13	28
Brentwood Boulevard	Second Street to Oak Street	61.4	5	10	22
Brentwood Boulevard	Oak Street to Balfour Road	60.0	4	9	19
Brentwood Boulevard	South of Balfour Road	65.3	8	17	36
Central Boulevard	West of Fairview Avenue	52.6	4	8	17
Central Boulevard	East of Fairview Avenue	55.2	9	20	42
Central Boulevard	West of Brentwood Boulevard	53.7	42	90	193
Deer Valley Road	North of Balfour Road	66.2	18	38	82
Deer Valley Road	South of Balfour Road	52.7	22	48	103
Empire Avenue	North of Lone Tree Way	59.5	49	105	226
Empire Avenue	South of Lone Tree Way	55.5	59	127	274
Fairview Avenue	Lone Tree Way to Grant Street	58.7	26	56	121
Fairview Avenue	Grant Street to Sand Creek Road	58.1	24	51	111
Fairview Avenue	Sand Creek Road to San Jose Avenue	61.0	20	43	93
Fairview Avenue	San Jose Avenue to Central Boulevard	61.2	18	38	82

TABLE 3.11-4: PREDICTED EXISTING TRAFFIC NOISE LEVELS

ROADWAY	SEGMENT	NOISE LEVEL AT SENSITIVE RECEPTORS (DB, LDN)[1]	DISTANCES TO TRAFFIC NOISE CONTOURS, LDN (FEET)		
			70 DB	65 DB	60 DB
Fairview Avenue	Central Boulevard to Balfour Road	60.8	14	29	63
Fairview Avenue	South of Balfour Road	55.8	9	19	41
Grant Street	West of Fairview Avenue	53.3	21	45	97
Grant Street	East of Fairview Avenue	58.9	64	139	299
Grant Street	West of Brentwood Boulevard	57.5	28	60	129
Griffith Lane	North of Balfour Road	51.8	14	30	66
Griffith Lane	South of Balfour Road	54.5	17	36	77
Highland Way	South of Sand Creek Road	56.6	7	15	33
Hillcrest Avenue	North of Lone Tree Way	60.6	210	452	974
Hillcrest Avenue	South of Lone Tree Way	54.2	62	133	286
Lone Tree Way	West of Hillcrest Avenue	62.6	35	76	163
Lone Tree Way	Hillcrest Avenue to SR 4	65.2	20	44	95
Lone Tree Way	SR 4 to Shady Willow Lane	67.7	10	22	47
Lone Tree Way	Shady Willow Lane to Empire Avenue	66.6	6	14	30
Lone Tree Way	Empire Avenue to Fairview Avenue	61.4	25	54	116
Lone Tree Way	Fairview Avenue to O'Hara Avenue	60.7	8	17	37
Lone Tree Way	O'Hara Avenue to Anderson Lane	64.4	9	19	41
Lone Tree Way	Anderson Lane to Brentwood Boulevard	64.2	8	17	37
Lone Tree Way	East of Brentwood Boulevard	52.3	19	41	88
Marsh Creek Road	West of SR 4	59.8	19	42	90
Marsh Creek Road	East of SR 4	66.5	18	39	85
Minnesota Avenue	North of Sand Creek Road	54.0	8	18	39
Minnesota Avenue	Sand Creek Road to Balfour Road	55.2	4	9	20
O'Hara Avenue	North of Lone Tree Way	62.4	7	14	31
O'Hara Avenue	South of Lone Tree Way	57.9	23	50	108
O'Hara Avenue	North of Sand Creek Road	57.5	10	22	47
O'Hara Avenue	South of Sand Creek Road	59.4	9	20	44
Oak Street	East of Brentwood Boulevard	60.3	11	23	50
San Jose Avenue	West of Fairview Avenue	56.3	14	29	63

TABLE 3.11-4: PREDICTED EXISTING TRAFFIC NOISE LEVELS

ROADWAY	SEGMENT	NOISE LEVEL AT SENSITIVE RECEPTORS (DB, LDN)[1]	DISTANCES TO TRAFFIC NOISE CONTOURS, LDN (FEET)		
			70 DB	65 DB	60 DB
San Jose Avenue	East of Fairview Avenue	55.3	14	29	63
Sand Creek Road	SR 4 to Shady Willow Lane	64.8	4	8	17
Sand Creek Road	Shady Willow Lane to Fairview Avenue	60.4	3	5	12
Sand Creek Road	Fairview Avenue to Minnesota Avenue	60.2	4	9	19
Sand Creek Road	Minnesota Avenue to O'Hara Avenue	60.2	7	15	32
Sand Creek Road	O'Hara Avenue to Brentwood Boulevard	55.5	18	39	83
Sand Creek Road	East of Brentwood Boulevard	55.7	23	50	108
Shady Willow Lane	Lone Tree Way to Sand Creek Road	57.0	14	30	64
Slatten Ranch Road	North of Lone Tree Way	59.6	31	68	146
SR 4	North of Sand Creek Road	61.0	36	77	166
SR 4	Sand Creek Road to Balfour Road	62.3	35	76	164
SR 4	Balfour Road to Marsh Creek Road	63.2	27	58	126
Sunset Road	East of Brentwood Boulevard	56.8	16	34	73
Walnut Boulevard	North of Oak Street	64.8	16	35	74
Walnut Boulevard	Oak Street to Balfour Road	62.4	22	47	100
Walnut Boulevard	South of Balfour Road	58.5	48	104	225

[1] *TRAFFIC NOISE LEVELS ARE PREDICTED AT THE CLOSEST SENSITIVE RECEPTORS OR AT A DISTANCE OF 100 FEET IN COMMERCIAL/RETAIL AREAS.*

[2] *NOISE CONTOURS ARE MEASURED FROM ROADWAY CENTERLINES AND ACCOUNT FOR AREAS WHICH ARE PRIMARILY SHIELED BY SOUND WALLS.*

Source: W-trans Transportation Engineers, Caltrans, j.c. brennan & associates, Inc., 2014

Railroad Noise Levels

Union Pacific Railroad Line (UPRR) – Currently Inactive

The Union Pacific Railroad (UPRR) line is bisects the City of Brentwood from the northwest corner of the city to the southeast corner of the city. This portion of the railroad line has not been in use since sometime prior to the year 2000. The line is maintained by UPRR as a standby route with no planned use for freight movement. However, there are indications that future use of the line could be used for commuter passenger service or future freight service.

Rail operations associated with light rail passenger service is generally quiet in comparison to freight train operations. Although light rail operations may include 50 or more operations per day, the 60 dB CNEL contour will generally not extend more than 100 feet from the railroad track centerline.

To conservatively estimate potential noise impacts associated with railroad line activities, it was assumed that up to 10 freight train operations may occur during a 24-hour period. Assuming that each train generated a sound exposure level (SEL) of 100 dB at a distance of 100 feet from the railroad centerline, the Ldn noise level can be calculated using the following equation.

$$Ldn = SEL + 10 \log N_{eq} - 49.4 \text{ dB, where:}$$

SEL is the typical single event sound exposure level of an individual train event (100 dB at a distance of 100 feet), N_{eq} is the sum of the daytime (7 a.m. to 10 p.m.) train events, plus 10 times the number of nighttime (10 p.m. to 7 a.m.) train events (a total of 44), and 49.4 is ten times the logarithm of the number of seconds per day. Assuming an even distribution of trains between daytime, evening and nighttime hours, the Ldn would be 67 dB.

BNSF Railway

The BNSF railroad line crosses through the northeast corner of the Brentwood Planning Area. The railroad is currently an active freight and passenger rail line.

In order to quantify noise exposure from existing train operations, a continuous (24-hour) noise level measurement survey was conducted. The purpose of the noise level measurements was to determine typical sound exposure levels (SEL) for railroad line operations, while accounting for the effects of travel speed, warning horns and other factors which may affect noise generation. In addition, the noise measurement equipment was programmed to identify individual train events, so that the typical number of train operations could be determined.

Table 3.11-5 shows a summary of the continuous noise measurement results for the BNSF.

TABLE 3.11-5: RAILROAD NOISE MEASUREMENT RESULTS					
MEASUREMENT LOCATION	RAILROAD TRACK	GRADE CROSSING /WARNING HORN	TRAIN EVENTS PER 24-HR PERIOD	DISTANCE TO CL	AVERAGE SEL
Site A	BNSF	Yes	18 (approx 13 freight, 5 passenger)	100'	104 dB

SOURCE: J.C. BRENNAN & ASSOCIATES, INC - 2014

Noise measurement equipment consisted of a Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter equipped with a LDL ½" microphone. The measurement system was calibrated using a LDL Model CAL200 acoustical calibrator before and after testing. The measurement equipment meets all of the pertinent requirements of the American National Standards Institute (ANSI) for Type 1 (precision) sound level meters.

Based upon the noise level measurements shown in Table 3.11-5, the average SEL for train operations along the BNSF line was 104 dB a distance of 100 feet from the track centerline, with approximately 14 train events occurring during daytime hours and 4 events during nighttime hours.

To determine the distances to the day/night average (Ldn) railroad contours, it is necessary to calculate the Ldn for typical train operations. This was done using the SEL values and above-described number and distribution of daily freight train operations. The Ldn may be calculated as follows:

$$Ldn = SEL + 10 \log N_{eq} - 49.4 \text{ dB, where:}$$

SEL is the mean Sound Exposure Level of the event, N_{eq} is the sum of the number of daytime events (7 a.m. to 10 p.m.) per day, plus 10 times the number of nighttime events (10 p.m. to 7 a.m.) per day, and 49.4 is ten times the logarithm of the number of seconds per day. Based upon the above-described noise level data, number of operations and methods of calculation, the L_{dn} value for railroad line operations have been calculated, and the distances to the L_{dn} noise level contours are shown in Table 3.11-6.

TABLE 3.11-6: APPROXIMATE DISTANCES TO THE RAILROAD NOISE CONTOURS			
EXTERIOR NOISE LEVEL AT 100 FEET, L_{DN}	DISTANCE TO EXTERIOR NOISE LEVEL CONTOURS, FEET		
	60 DB L_{DN}	65 DB L_{DN}	70 DB L_{DN}
UPRR LINE – ESTIMATED FUTURE USE			
67 dB	290	135	62
BNSF LINE – AS MEASURED			
72 dB	632	293	136

SOURCE: J.C. BRENNAN & ASSOCIATES, INC. 2014.

Fixed Noise Sources

The production of noise is a result of many industrial processes, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by federal and state employee health and safety regulations (OSHA and Cal-OSHA), but exterior noise levels may exceed locally acceptable standards. Commercial, recreational and public service facility activities can also produce noise which affects adjacent sensitive land uses. These noise sources can be continuous and may contain tonal components which have a potential to annoy individuals who live nearby. In addition, noise generation from fixed noise sources may vary based upon climatic conditions, time of day and existing ambient noise levels.

In Brentwood, fixed noise sources typically include parking lots, loading docks, parks, schools, and other commercial/retail use noise sources (HVAC, exhaust fans, etc.)

From a land use planning perspective, fixed-source noise control issues focus upon two goals:

1. To prevent the introduction of new noise-producing uses in noise-sensitive areas; and
2. To prevent encroachment of noise sensitive uses upon existing noise-producing facilities.

The first goal can be achieved by applying noise level performance standards to proposed new noise-producing uses. The second goal can be met by requiring that new noise-sensitive uses in near proximity to noise-producing facilities include mitigation measures that would ensure compliance with noise performance standards.

Fixed noise sources which are typically of concern include but are not limited to the following:

- HVAC Systems
- Pump Stations
- Steam Valves
- Generators
- Air Compressors
- Conveyor Systems
- Pile Drivers
- Drill Rigs
- Welders
- Outdoor Speakers
- Chippers
- Loading Docks
- Cooling Towers/Evaporative Condensers
- Lift Stations
- Steam Turbines
- Fans
- Heavy Equipment
- Transformers
- Grinders
- Gas or Diesel Motors
- Cutting Equipment
- Blowers
- Cutting Equipment
- Amplified music and voice

The types of uses which may typically produce the noise sources described above, include, but are not limited to: wood processing facilities, pump stations, industrial/agricultural facilities, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, special events such as concerts, and athletic fields. Typical noise levels associated with various types of stationary noise sources are shown in Table 3.11-7.

Table 3.11-7: Typical Stationary Source Noise Levels

USE	NOISE LEVEL AT 100 FEET, LEQ [1]	DISTANCE TO NOISE CONTOURS, FEET			
		50 DB LEQ (NO SHIELDING)	45 DB LEQ (NO SHIELDING)	50 DB LEQ (WITH 5 DB SHIELDING)	45 DB LEQ (WITH 5 DB SHIELDING)
Auto Body Shop	56 dB	200	355	112	200
Auto Repair (Light)	53 dB	141	251	79	141
Busy Parking Lot	54 dB	158	281	89	158
Cabinet Shop	62 dB	398	708	224	398
Car Wash	63 dB	446	792	251	446
Cooling Tower	69 dB	889	1,581	500	889
Loading Dock	66 dB	596	1,059	335	596
Lumber Yard	68 dB	794	1,413	447	794
Maintenance Yard	68 dB	794	1,413	447	794
Outdoor Music Venue	90 dB	10,000	17,783	5,623	10,000
Paint Booth Exhaust	61 dB	355	631	200	355
Skate Park	60 dB	316	562	178	316
School Playground / Neighborhood Park	54 dB	158	281	89	158
Truck Circulation	48 dB	84	149	47	84
Vendor Deliveries	58 dB	251	446	141	251

[1] Analysis assumes a source-receiver distance of approximately 100 feet, no shielding, and flat topography. Actual noise levels will vary depending on site conditions and intensity of the use. This information is intended as a general rule only, and is not suitable for final site-specific noise studies.

Source: j.c. brennan & associates, Inc. 2014.

SUNSET INDUSTRIAL COMPLEX

The primary noise-generating industrial uses within Brentwood are located in the Sunset Industrial Complex located at the northeast corner of the city, north of Sunset Road and west of Sellers Avenue. Noise generating uses located in this area include Brentwood Ready Mix Concrete, the City of Brentwood Waster Water Treatment Plant (WWTP), City of Brentwood Solid Waster Transfer Station, and the City of Brentwood Sunset Park Athletic Complex.

BRENTWOOD READY MIX

A noise measurement of the Brentwood Ready Mix plant operations was conducted at a distance of 260 feet from the main plant during operation on December 14, 2012. The plant generated noise levels of 67 dB Leq at this distance. Noise sources included truck idling and backup alarms as well as plant operations. Based upon the measured noise level, the 50 dB Leq noise contour would be located approximately 1,840 feet from the plant, assuming no shielding from intervening structures or barriers. With intervening structures or a noise barrier, the 50 dB Leq noise contour is estimated to be located at a distance of approximately 1,035 feet.

COMMUNITY NOISE SURVEY

A community noise survey was conducted to document ambient noise levels at various locations throughout the Planning Area. Short-term noise measurements were conducted at five locations throughout the city on January 13, 2013 during daytime and nighttime periods. In addition, three continuous 24-hour noise monitoring sites were also conducted to record day-night statistical noise level trends in locations within the Planning Area. The data collected included the hourly average (Leq), median (L50), and the maximum level (Lmax) during the measurement period. Noise monitoring sites and the measured noise levels at each site are summarized in Table 3.11-8 and Table 3.11-9. Figure 3.11-1 shows the locations of the noise monitoring sites.

Community noise monitoring equipment included Larson Davis Laboratories (LDL) Model 820 and Model 824 precision integrating sound level meters equipped with LDL ½" microphones. The measurement systems were calibrated using a LDL Model CAL200 acoustical calibrator before and after testing. The measurement equipment meets all of the pertinent requirements of the American National Standards Institute (ANSI) for Type 1 (precision) sound level meters.

TABLE 3.11-8: EXISTING CONTINUOUS 24-HOUR AMBIENT NOISE MONITORING RESULTS

SITE	LOCATION	LDN (DBA)	MEASURED HOURLY NOISE LEVELS, DBA LOW-HIGH (AVERAGE)					
			DAYTIME (7:00 AM - 10:00 PM)			NIGHTTIME (10:00 PM – 7:00 AM)		
			LEQ	L50	LMAX	LEQ	L50	LMAX
A	Delta Road & Ghigliazza Way, RR ROW at Knighton Park. 100 ft to RR centerline.	71	53-76 (69)	44-53 (50)	65-107 (91)	42-69 (64)	31-48 (39)	60-96 (78)
B	Brentwood Blvd. & Sellers Ave., 90' to centerline.	67	62-66 (65)	56-63 (61)	73-94 (78)	52-64 (60)	33-60 (46)	73-85 (77)
C	SR 4 & Walnut Blvd. – 100' to centerline.	69	59-65 (63)	55-61 (59)	73-86 (82)	54-69 (62)	41-61 (51)	74-98 (82)

SOURCE – J.C. BRENNAN & ASSOCIATES, INC. – 2014

TABLE 3.11-9: EXISTING SHORT-TERM COMMUNITY NOISE MONITORING RESULTS

SITE	LOCATION	TIME[1]	MEASURED SOUND LEVEL, DB			NOTES
			LEQ	L50	LMAX	
1	Linear park at Cedar Falls Avenue	2:43 p.m.	52	51	61	Traffic on SR 4 is primary noise source. Aircraft flyover.
		10:04 pm	57	56	64	Traffic on SR 4 is primary noise source.
2	Balfour-Guthrie Park at commercial center	3:28 p.m.	52	50	60	Traffic on Balfour, students in parking lot talking, tractor in field to west are primary noise sources.
		10:26 p.m.	49	47	57	Traffic, dogs barking/howling
3	Summerwood Park at Stonewood Drive	3:55 p.m.	43	41	57	Distant traffic, kids playing basketball
		10:49 p.m.	45	44	55	Traffic, jet overflight
4	City Park	4:31 p.m.	54	51	64	Traffic, pedestrians
		11:13 p.m.	47	46	53	Traffic, pedestrians
5	Medallion Park at Europena Drive	5:10 p.m.	55	50	73	Lone Tree traffic
		11:40 p.m.	48	47	57	Traffic, jet overflight

1 - ALL COMMUNITY NOISE MEASUREMENT SITES HAVE TEST DURATIONS OF 10:00 MINUTES.

SOURCE - J.C. BRENNAN & ASSOCIATES, INC. 2014.

The results of the community noise survey shown in Table 3.11-8 and 3.11-9 indicate that existing transportation (traffic and rail) noise sources were the major contributor of noise observed during daytime hours, especially during vehicle passbys. However, some of the more rural locations do not experience frequent vehicle activity so background noise levels are correspondingly low. Additionally, occasional aircraft flyovers were observed but were generally not observed to be a primary source of noise within the city.

3.11.2 REGULATORY SETTING

FEDERAL

Federal Highway Administration (FHWA)

The FHWA has developed noise abatement criteria that are used for federally funded roadway projects or projects that require federal review. These criteria are discussed in detail in Title 23 Part 772 of the Federal Code of Regulations (23CFR772).

Environmental Protection Agency (EPA)

The EPA has identified the relationship between noise levels and human response. The EPA has determined that over a 24-hour period, an Leq of 70 dBA will result in some hearing loss. Interference with activity and annoyance will not occur if exterior levels are maintained at an Leq of 55 dBA and interior levels at or below 45 dBA. Although these levels are relevant for planning and design and useful for informational purposes, they are not land use planning criteria because they do not consider economic cost, technical feasibility, or the needs of the community.

The EPA has set 55 dBA Ldn as the basic goal for residential environments. However, other federal agencies, in consideration of their own program requirements and goals, as well as difficulty of actually achieving a goal of 55 dBA Ldn, have generally agreed on the 65 dBA Ldn level as being appropriate for residential uses. At 65 dBA L_{dn} activity interference is kept to a minimum, and annoyance levels are still low. It is also a level that can realistically be achieved.

Department of Housing and Urban Development (HUD)

HUD was established in response to the Urban Development Act of 1965 (Public Law 90-448). HUD was tasked by the Housing and Urban Development Act of 1965 (Public Law 89-117) "to determine feasible methods of reducing the economic loss and hardships suffered by homeowners as a result of the depreciation in the value of their properties following the construction of airports in the vicinity of their homes."

HUD first issued formal requirements related specifically to noise in 1971 (HUD Circular 1390.2). These requirements contained standards for exterior noise levels along with policies for approving HUD-supported or assisted housing projects in high noise areas. In general, these requirements established the following three zones:

- 65 dBA L_{dn} or less - an acceptable zone where all projects could be approved.
- Exceeding 65 dBA L_{dn} but not exceeding 75 dBA L_{dn} - a normally unacceptable zone where mitigation measures would be required and each project would have to be individually evaluated for approval or denial. These measures must provide 5 dBA of attenuation above the attenuation provided by standard construction required in a 65 to 70 dBA L_{dn} area and 10 dBA of attenuation in a 70 to 75 dBA L_{dn} area.
- Exceeding 75 dBA L_{dn} - an unacceptable zone in which projects would not, as a rule, be approved.

HUD's regulations do not include interior noise standards. Rather a goal of 45 dBA Ldn is set forth and attenuation requirements are geared towards achieving that goal. HUD assumes that using standard construction techniques, any building will provide sufficient attenuation so that if the exterior level is 65 dBA L_{dn} or less, the interior level will be 45 dBA L_{dn} or less. Thus, structural attenuation is assumed at 20 dBA. However HUD regulations were promulgated solely for residential development requiring government funding and are not related to market rate residences or the operation of schools or churches.

The Federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA) under the EPA. Noise exposure of this type is dependent on work conditions and is addressed through a facility's or construction contractor's health and safety plan. With the exception of construction workers involved in facility construction, occupational noise is irrelevant to this study and is not addressed further in this document.

Federal Transit Administration

The Federal Transit Administration (FTA) has identified vibration impact criteria for sensitive buildings, residences, and institutional land uses near rail transit and railroads. The thresholds for residences and buildings where people normally sleep (e.g., nearby residences) are 72 VdB for frequent events (more than 70 events of the same source per day), 75 VdB for occasional events (30 to 70 vibration events of the same source per day), and 80 VdB for infrequent events (less than 30 vibration events of the same source per day). These criteria are summarized in Table 3.11-10.

TABLE 3.11-10: GROUNDBORNE VIBRATION IMPACT CRITERIA

LAND USE CATEGORY	GROUNDBORNE VIBRATION IMPACT LEVELS (VDB RE 1 μINCH/SEC, RMS)		
	FREQUENT EVENTS[1]	OCCASIONAL EVENTS[2]	INFREQUENT EVENTS[3]
CATEGORY 1 Buildings where vibration would interfere with interior operations.	65 VdB[4]	65 VdB[4]	65 VdB[4]
CATEGORY 2 Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
CATEGORY 3 Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

Notes:
1. "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.
2. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.
3. "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.
4. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research should always require detailed evaluation to define the acceptable vibration levels. Ensuring low vibration levels in a building requires special design of HVAC systems and stiffened floors.

SOURCE: U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL TRANSIT ADMINISTRATION, TRANSIT NOISE AND VIBRATION IMPACT ASSESSMENT, MAY 2006, FTA-VA-90-1003-06.

STATE

California Department of Transportation (Caltrans) – Noise Insulation

The State establishes exterior sound transmission control standards for new hotels, motels, dormitories, apartment houses, and dwellings (other than detached single-family) as set forth in the 2010 California Building Code (Chapter 12, Section 1207.11). Interior noise levels attributable to exterior environmental noise sources shall not exceed 45 dBA DNL in any habitable room. When exterior noise levels (the higher of existing or future) where residential structures are to be located exceed 60 dBA DNL, a report must be submitted with the building plans describing the noise control measures that have been incorporated into the design of the project to meet the noise limit. The General Plan facilitates the implementation of the Building Code noise insulation standards by establishing existing and future noise exposure contours in Brentwood.

California Department of Transportation (Caltrans) – Construction Vibration

There are no applicable State plans, policies, regulations, or laws related to ground-borne vibration from construction activities, but guidance developed by the California Department of Transportation (Caltrans) has been used in past construction vibration impact assessments of projects developed in San José. Caltrans uses a vibration limit of 12.7 mm/sec (0.5 inches/sec), PPV for buildings structurally sound and designed to modern engineering standards. A conservative vibration limit of 5 mm/sec (0.2 inches/sec), PPV has been used for buildings that are found to be structurally sound but structural damage is a major concern. For historic buildings or buildings that are documented to be structurally weakened, a conservative limit of 2 mm/sec (0.08 inches/sec), PPV is often used to provide the highest level of protection. All of these limits have been used successfully and compliance to these limits has not been known to result in appreciable structural damage. All vibration limits referred to herein apply on the ground level and take into account the response of structural elements (i.e., walls and floors) to ground-borne excitation.

Governor's Office of Planning and Research (OPR)

OPR has developed guidelines for the preparation of general plans (Office of Planning and Research, 1998). The guidelines include land use compatibility guidelines for noise exposure.

LOCAL

City Noise Thresholds

The existing Brentwood General Plan Noise Element establishes goals and policies, as well as criteria for evaluating the compatibility of individual land uses with respect to noise exposure. The intent is to provide guidance for determining noise impacts due to, and upon proposed projects. The proposed General Plan includes an updated and revised set of noise impact criteria, as shown in Tables 3.11-11 and 3.11-12.

3.11.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the project will have a significant impact related to noise if it will:

- Expose people to or generate noise levels in excess of established in the local general plan, noise ordinance, or applicable standards of other agencies;
    - A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the General Plan or Municipal Code (see Tables 3.11-11 and 3.11-12). For single family residences the noise exposure is considered "normally acceptable" up to 60 dBA L_{dn} for exterior uses. For interior uses, a significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed 45 dBA L_{dn}.
- Expose people to or generate excessive ground-borne vibration or ground-borne noise levels;
    - A significant vibration impact would be identified if the project would expose persons to excessive vibration levels. Groundborne vibration levels from railroad operations exceeding the Federal Transit Administration's vibration impact criteria (see Table 3.11-10) or ground-borne vibration levels from construction activities exceeding those specified in the Caltrans Guidance Manual would result in a significant impact.
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
    - A significant permanent increase would be identified if noise generated by the project would substantially increase noise levels at sensitive receivers in the vicinity. Following standard practice, a substantial increase would occur if existing plus project noise levels would exceed the FICON significant increase thresholds outlined in Table 3.11-13.
- Result in a substantial temporary or periodic increase in the ambient noise levels in the project vicinity above levels existing without the project;
    - A significant temporary increase would be identified if noise generated by the project would substantially increase noise levels at sensitive receivers in the vicinity. Following standard practice, a substantial increase would occur if existing plus project noise levels would exceed the FICON significant increase thresholds outlined in Table 3.11-13. It should be noted that normal construction activities would be exempt from the requirement if performed according to the City's restrictions on hours/days of construction and best practice guidelines.
- Where projects within an area covered by an airport land use plan or within two miles of a public airport or public use airport when such an airport land use plan has not been adopted, or within the vicinity of a private airstrip, expose people residing or working in the project area to excessive aircraft noise levels; or
    - This guideline is not applicable because the project is not located within an airport land use plan or within two miles of a public airport or public use airport. Therefore, this checklist item is not carried forward for further analysis.

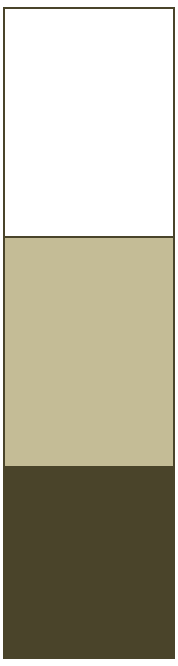
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.
    - This guideline is not applicable because the project is not located within the vicinity of a private airstrip. Therefore, this checklist item is not carried forward for further analysis.

APPLICABLE NOISE STANDARDS

A significant noise impact would occur if land uses are exposed to levels in excess of those shown in Tables 3.11-11 and 3.11-12.

TABLE 3.11-11: LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENT

LAND USE CATEGORY	*EXTERIOR NOISE EXPOSURE (LDN)*						
	55	*60*	*65*	*70*	*75*	*80*	
Single-Family Residential							
Multi-Family Residential, Hotels, and Motels							
Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds							
Schools, Libraries, Museums, Hospitals, Personal Care, Meeting Halls, Churches							
Office Buildings, Business Commercial, and Professional							
Industrial							



NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special insulation requirements

CONDITIONALLY ACCEPTABLE

Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features included in the design

UNACCEPTABLE

New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies

TABLE 3.11-12: STATIONARY (NON-TRANSPORTATION) NOISE SOURCE STANDARDS			
LAND USE RECEIVING THE NOISE	HOURLY NOISE-LEVEL DESCRIPTOR	EXTERIOR NOISE-LEVEL STANDARD (DBA)	
		DAYTIME (7AM-10PM)	NIGHTTIME (10PM-7AM)
Residential	L_{eq}	*55*	*45*
	L_{max}	*70*	*65*

Notes:

a) The residential standards apply to all properties that are zoned for residential use. The exterior noise level standard is to be applied at the property line of the receiving land use or at a designated outdoor activity area (at the discretion of the Community Development Director) of the new development. For mixed-use projects, the exterior noise level standard may be waived (at the discretion of the Community Development Director) if the project does not include a designated activity area and mitigation of property line noise is not practical. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings). The City can impose standards that are more restrictive than specified above based upon determination of existing low ambient noise levels.

b) Each of the noise levels specified above shall be lowered by 5 dBA for tonal noises characterized by a whine, screech, or hum, noises consisting primarily of speech or music, or recurring impulsive noises. In no case shall mitigation be required to a level that is less than existing ambient noise levels, as determined through measurements conducted during the same operational period as the subject noise source.

c) In situations where the existing noise level exceeds the noise levels indicated in the above table, any new noise source must include mitigation that reduces the noise level of the noise source to the existing level plus 3 dB.

d) Exterior noise exposure level not exceeding 65 dB L_{dn} is allowed along the State Route 4 corridor, the Union Pacific Railroad corridor, and arterial roadways.

SIGNIFICANT CHANGE CRITERIA

Generally, a project may have a significant effect on the environment if it will substantially increase the ambient noise levels for adjoining areas or expose people to severe noise levels. In practice, more specific professional standards have been developed. These standards state that a noise impact may be considered significant if it would generate noise that would conflict with local project criteria or ordinances, or substantially increase noise levels at noise sensitive land uses. The potential increase in traffic noise from the project is a factor in determining significance. Research into the human perception of changes in sound level indicates the following:

- A 3-dB change is barely perceptible;
- A 5-dB change is clearly perceptible; and
- A 10-dB change is perceived as being twice or half as loud.

A limitation of using a single noise level increase value to evaluate noise impacts is that it fails to account for pre-project noise conditions. Table 3.11-13 is based upon recommendations made by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been accepted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the Ldn.

TABLE 3.11-13: SIGNIFICANCE OF CHANGES IN NOISE EXPOSURE

Ambient Noise Level Without Project, L_{dn}	Increase Required for Significant Impact
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

SOURCE: FEDERAL INTERAGENCY COMMITTEE ON NOISE (FICON)

Based on the Table 3.11-13 data, an increase in traffic noise levels of 5 dB or more would be significant where the pre-project noise level is less than 60 dB Ldn. Extending this concept to higher noise levels, an increase in the traffic noise level of 1.5 dB or more may be significant where the pre-project traffic noise level exceeds 65 dB Ldn. The rationale for the Table 3.11-13 criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause annoyance.

IMPACTS AND MITIGATION MEASURES

Impact 3.11-1: General Plan implementation may result in exposure to significant traffic noise sources (Significant and Unavoidable)

The FHWA Highway Traffic Noise Prediction Model (FHWA-RD 77-108) was used to develop Ldn (24-hour average) noise contours for all highways and major roadways in the General Plan study area. The model is based upon the CALVENO noise emission factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA Model predicts hourly Leq values for free-flowing traffic conditions, and is generally considered to be accurate within 1.5 dB. To predict Ldn values, it is necessary to determine the hourly distribution of traffic for a typical 24-hour period.

Existing traffic volumes were obtained from the traffic modeling performed for the General Plan study area. Day/night traffic distributions were based upon continuous hourly noise measurement data and j.c. brennan & associates, Inc. file data for similar roadways. Caltrans vehicle truck counts were obtained for SR 4. Using these data sources and the FHWA traffic noise prediction methodology, traffic noise levels were calculated for existing conditions. Tables 3.11-14 and 3.11-15 show the results of this analysis.

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each project-area roadway segment. In some locations sensitive receptors may be located at distances which vary from the assumed calculation distance and may experience shielding from intervening barriers or sound walls. However, the traffic noise analysis is representative of the majority of sensitive receptors located closest to the project-area roadway segments analyzed in this report.

The actual distances to noise level contours may vary from the distances predicted by the FHWA model due to roadway curvature, grade, shielding from local topography or structures, elevated roadways, or elevated receivers. The distances reported in Tables 3.11-14 and 3.11-15 are generally considered to be conservative estimates of noise exposure along roadways in Brentwood.

Table 3.11-14 shows the future noise levels and the increase in noise levels associated with traffic on the local roadway network under the buildout of the General Plan to city limits.

Table 3.11-15 shows the future noise levels and the increase in noise levels associated with traffic on the local roadway network under the buildout of the General Plan to the Planning Area.

TABLE 3.11-14: TRAFFIC NOISE LEVELS - GENERAL PLAN BUILDOUT TO CITY LIMITS VS. EXISTING NOISE LEVELS

Roadway	Segment	Noise Levels (Ldn, dB) at Sensitive Receptors[1]			Distance to General Plan Buildout to City Limits Traffic Noise Contours, feet[2]		
		Existing	Buildout to City Limits	Change (dB)	70 dB Ldn	65 dB Ldn	60 dB Ldn
Second Street	West of Brentwood Boulevard	57.0	57.5	0.5	12	27	57
Second Street	East of Brentwood Boulevard	57.0	57.4	0.4	12	26	56
Anderson Lane	North of Lone Tree Way	53.0	56.6	3.6	12	25	54
Anderson Lane	South of Lone Tree Way	50.5	58.0	**7.5**	18	39	85
Balfour Road	Deer Valley Road to American Avenue	62.1	65.3	**3.2**	23	50	108
Balfour Road	American Avenue to Foothill Drive	60.2	62.3	2.1	25	54	117
Balfour Road	Foothill Drive to John Muir Parkway	61.6	63.3	1.7	63	136	293
Balfour Road	John Muir Parkway to Eagle Rock Avenue	65.3	67.4	**2.1**	69	148	319
Balfour Road	Eagle Rock Avenue to SR 4	66.6	71.3	**4.7**	48	104	223
Balfour Road	SR 4 to Fairview Avenue	62.7	64.7	2.0	24	51	110
Balfour Road	Fairview Avenue to Minnesota Avenue	62.1	64.7	2.6	51	110	236
Balfour Road	Minnesota Avenue to Griffith Lane	61.4	62.6	1.2	36	77	165
Balfour Road	Griffith Lane to Walnut Boulevard	62.1	63.5	1.4	15	33	71
Balfour Road	Walnut Boulevard to Brentwood Boulevard	59.8	61.5	**1.7**	57	122	263
Balfour Road	East of Brentwood Boulevard	56.1	57.1	1.0	15	33	72
Brentwood Boulevard	North of Lone Tree Way	62.5	65.4	2.9	28	60	129

TABLE 3.11-14: TRAFFIC NOISE LEVELS - GENERAL PLAN BUILDOUT TO CITY LIMITS VS. EXISTING NOISE LEVELS

Roadway	Segment	Noise Levels (Ldn, dB) at Sensitive Receptors[1]			Distance to General Plan Buildout to City Limits Traffic Noise Contours, feet[2]		
		Existing	Buildout to City Limits	Change (dB)	70 dB Ldn	65 dB Ldn	60 dB Ldn
Brentwood Boulevard	Lone Tree Way to Sunset Road	63.3	66.7	**3.4**	34	73	157
Brentwood Boulevard	Sunset Road to Sand Creek Road	63.2	65.8	2.6	20	43	92
Brentwood Boulevard	Sand Creek Road to Central Boulevard	61.5	61.9	0.4	29	62	134
Brentwood Boulevard	Central Boulevard to Second Street	58.0	58.4	0.4	12	25	54
Brentwood Boulevard	Second Street to Oak Street	61.4	61.8	0.4	17	37	80
Brentwood Boulevard	Oak Street to Balfour Road	60.0	62.5	**2.5**	10	21	46
Brentwood Boulevard	South of Balfour Road	65.3	68.6	**3.3**	18	39	83
Central Boulevard	West of Fairview Avenue	52.6	53.4	0.8	5	10	22
Central Boulevard	East of Fairview Avenue	55.2	59.2	4.0	20	44	95
Central Boulevard	West of Brentwood Boulevard	53.7	54.3	0.6	27	58	125
Deer Valley Road	North of Balfour Road	66.2	67.1	0.9	15	32	69
Deer Valley Road	South of Balfour Road	52.7	54.4	1.7	8	18	39
Empire Avenue	North of Lone Tree Way	59.5	58.8	-0.7	34	72	156
Empire Avenue	South of Lone Tree Way	55.5	57.0	1.5	33	71	153
Fairview Avenue	Lone Tree Way to Grant Street	58.7	59.7	1.0	15	33	71
Fairview Avenue	Grant Street to Sand Creek Road	58.1	58.8	0.7	13	29	62
Fairview Avenue	Sand Creek Road to San Jose Avenue	61.0	63.2	2.2	22	47	102
Fairview Avenue	San Jose Avenue to Central Boulevard	61.2	63.4	2.2	23	49	105
Fairview Avenue	Central Boulevard to Balfour Road	60.8	62.2	1.4	15	33	71

TABLE 3.11-14: TRAFFIC NOISE LEVELS - GENERAL PLAN BUILDOUT TO CITY LIMITS VS. EXISTING NOISE LEVELS

Roadway	Segment	Noise Levels (Ldn, dB) at Sensitive Receptors[1]			Distance to General Plan Buildout to City Limits Traffic Noise Contours, feet[2]		
		Existing	Buildout to City Limits	Change (dB)	70 dB Ldn	65 dB Ldn	60 dB Ldn
Fairview Avenue	South of Balfour Road	55.8	59.8	4.0	16	34	73
Grant Street	West of Fairview Avenue	53.3	54.0	0.7	16	35	76
Grant Street	East of Fairview Avenue	58.9	59.8	0.9	35	74	160
Grant Street	West of Brentwood Boulevard	57.5	61.0	**3.5**	22	48	103
Griffith Lane	North of Balfour Road	51.8	52.4	0.6	16	35	76
Griffith Lane	South of Balfour Road	54.5	55.0	0.5	11	24	52
Highland Way	South of Sand Creek Road	56.6	57.8	1.2	8	17	37
Hillcrest Avenue	North of Lone Tree Way	60.6	62.1	1.5	125	270	581
Hillcrest Avenue	South of Lone Tree Way	54.2	58.6	4.4	30	64	139
Lone Tree Way	West of Hillcrest Avenue	62.6	64.0	1.4	49	105	225
Lone Tree Way	Hillcrest Avenue to SR 4	65.2	66.3	1.1	64	137	295
Lone Tree Way	SR 4 to Shady Willow Lane	67.7	69.6	1.9	28	61	132
Lone Tree Way	Shady Willow Lane to Empire Avenue	66.6	68.9	**2.3**	36	79	169
Lone Tree Way	Empire Avenue to Fairview Avenue	61.4	64.6	**3.2**	56	120	258
Lone Tree Way	Fairview Avenue to O'Hara Avenue	60.7	64.9	**4.2**	24	51	110
Lone Tree Way	O'Hara Avenue to Anderson Lane	64.4	68.9	**4.5**	19	41	89
Lone Tree Way	Anderson Lane to Brentwood Boulevard	64.2	68.6	**4.4**	18	39	85
Lone Tree Way	East of Brentwood Boulevard	52.3	61.7	**9.4**	15	32	69
Marsh Creek Road	West of SR 4	59.8	65.5	**5.7**	20	42	91

TABLE 3.11-14: TRAFFIC NOISE LEVELS - GENERAL PLAN BUILDOUT TO CITY LIMITS VS. EXISTING NOISE LEVELS

Roadway	Segment	Noise Levels (Ldn, dB) at Sensitive Receptors[1]			Distance to General Plan Buildout to City Limits Traffic Noise Contours, feet[2]		
		Existing	Buildout to City Limits	Change (dB)	70 dB Ldn	65 dB Ldn	60 dB Ldn
Marsh Creek Road	East of SR 4	66.5	67.1	0.6	15	32	69
Minnesota Avenue	North of Sand Creek Road	54.0	54.9	0.9	6	13	27
Minnesota Avenue	Sand Creek Road to Balfour Road	55.2	56.5	1.3	7	15	32
O'Hara Avenue	North of Lone Tree Way	62.4	63.4	1.0	13	27	59
O'Hara Avenue	South of Lone Tree Way	57.9	60.1	**2.2**	31	66	142
O'Hara Avenue	North of Sand Creek Road	57.5	60.7	**3.2**	16	33	72
O'Hara Avenue	South of Sand Creek Road	59.4	62.0	**2.6**	16	34	74
Oak Street	East of Brentwood Boulevard	60.3	60.7	0.4	7	14	31
San Jose Avenue	West of Fairview Avenue	56.3	57.7	1.4	14	30	64
San Jose Avenue	East of Fairview Avenue	55.3	55.8	0.5	7	14	30
Sand Creek Road	SR 4 to Shady Willow Lane	64.8	67.6	2.8	39	85	183
Sand Creek Road	Shady Willow Lane to Fairview Avenue	60.4	62.9	2.5	29	63	136
Sand Creek Road	Fairview Avenue to Minnesota Avenue	60.2	61.5	1.3	13	28	61
Sand Creek Road	Minnesota Avenue to O'Hara Avenue	60.2	60.7	0.5	14	30	64
Sand Creek Road	O'Hara Avenue to Brentwood Boulevard	55.5	56.5	1.0	23	50	107
Sand Creek Road	East of Brentwood Boulevard	55.7	56.3	0.6	12	26	56
Shady Willow Lane	Lone Tree Way to Sand Creek Road	57.0	57.6	0.6	14	29	64
Slatten Ranch Road	North of Lone Tree Way	59.6	60.1	**0.5**	27	58	125

TABLE 3.11-14: TRAFFIC NOISE LEVELS - GENERAL PLAN BUILDOUT TO CITY LIMITS VS. EXISTING NOISE LEVELS

Roadway	Segment	Noise Levels (Ldn, dB) at Sensitive Receptors[1]			Distance to General Plan Buildout to City Limits Traffic Noise Contours, feet[2]		
		Existing	Buildout to City Limits	Change (dB)	70 dB Ldn	65 dB Ldn	60 dB Ldn
SR 4	North of Sand Creek Road	61.0	64.4	**3.4**	354	762	1642
SR 4	Sand Creek Road to Balfour Road	62.3	66.5	**4.1**	117	253	313
SR 4	Balfour Road to Marsh Creek Road	63.2	67.4	**4.2**	62	133	287
Sunset Road	East of Brentwood Boulevard	56.8	59.8	3.0	16	34	74
Walnut Boulevard	North of Oak Street	64.8	65.1	0.3	13	27	59
Walnut Boulevard	Oak Street to Balfour Road	62.4	63.9	1.5	29	64	137
Walnut Boulevard	South of Balfour Road	58.5	60.5	**2.0**	68	147	317

Bold Underline *= Significant increase in noise.*

[1] *TRAFFIC NOISE LEVELS ARE PREDICTED AT THE CLOSEST SENSITIVE RECEPTORS OR AT A DISTANCE OF 100 FEET IN COMMERCIAL/RETAIL AREAS.*

[2] *NOISE CONTOURS ARE MEASURED FROM ROADWAY CENTERLINES AND ACCOUNT FOR AREAS WHICH ARE PRIMARILY SHIELED BY SOUND WALLS.*

Source: W-trans Transportation Engineers, Caltrans, j.c. brennan & associates, Inc., 2014

TABLE 3.11-15: TRAFFIC NOISE LEVELS - GENERAL PLAN BUILDOUT TO PLANNING AREA VS. EXISTING NOISE LEVELS

Roadway	Segment	Noise Levels (Ldn, dB) 100 Feet From Centerline[1]			Distance to General Plan Buildout to Planning Area Traffic Noise Contours, feet[2]		
		Existing	Buildout to Planning Area	Change (dB)	70 dB Ldn	65 dB Ldn	60 dB Ldn
Second Street	West of Brentwood Boulevard	57.0	59.0	2.0	16	33	72
Second Street	East of Brentwood Boulevard	57.0	57.5	0.5	12	27	57
Anderson Lane	North of Lone Tree Way	53.0	56.6	3.6	12	25	54
Anderson Lane	South of Lone Tree Way	50.5	58.8	**8.3**	21	45	96
Balfour Road	Deer Valley Road to American Avenue	62.1	65.4	**3.3**	24	51	110
Balfour Road	American Avenue to Foothill Drive	60.2	62.3	2.1	25	55	118
Balfour Road	Foothill Drive to John Muir Parkway	61.6	63.4	1.8	64	138	297
Balfour Road	John Muir Parkway to Eagle Rock Avenue	65.3	67.5	**2.2**	70	150	323
Balfour Road	Eagle Rock Avenue to SR 4	66.6	68.8	**2.2**	33	71	153
Balfour Road	SR 4 to Fairview Avenue	62.7	64.8	**2.1**	24	52	113
Balfour Road	Fairview Avenue to Minnesota Avenue	62.1	64.8	2.7	52	113	243
Balfour Road	Minnesota Avenue to Griffith Lane	61.4	62.6	1.2	36	77	167
Balfour Road	Griffith Lane to Walnut Boulevard	62.1	63.6	1.5	15	33	72
Balfour Road	Walnut Boulevard to Brentwood Boulevard	59.8	62.2	**2.4**	63	135	291
Balfour Road	East of Brentwood Boulevard	56.1	58.1	2.0	18	39	84

TABLE 3.11-15: TRAFFIC NOISE LEVELS - GENERAL PLAN BUILDOUT TO PLANNING AREA VS. EXISTING NOISE LEVELS

Roadway	Segment	Noise Levels (Ldn, dB) 100 Feet From Centerline[1]			Distance to General Plan Buildout to Planning Area Traffic Noise Contours, feet[2]		
		Existing	Buildout to Planning Area	Change (dB)	70 dB Ldn	65 dB Ldn	60 dB Ldn
Brentwood Boulevard	North of Lone Tree Way	62.5	65.4	2.9	28	60	129
Brentwood Boulevard	Lone Tree Way to Sunset Road	63.3	67.1	**3.8**	36	77	166
Brentwood Boulevard	Sunset Road to Sand Creek Road	63.2	66.0	2.8	20	44	94
Brentwood Boulevard	Sand Creek Road to Central Boulevard	61.5	62.1	0.6	30	64	138
Brentwood Boulevard	Central Boulevard to Second Street	58.0	58.4	0.4	12	25	54
Brentwood Boulevard	Second Street to Oak Street	61.4	62.6	1.2	19	41	89
Brentwood Boulevard	Oak Street to Balfour Road	60.0	63.0	3.0	11	23	49
Brentwood Boulevard	South of Balfour Road	65.3	69.2	**3.9**	20	42	91
Central Boulevard	West of Fairview Avenue	52.6	53.4	0.8	5	10	22
Central Boulevard	East of Fairview Avenue	55.2	59.3	4.1	21	45	97
Central Boulevard	West of Brentwood Boulevard	53.7	54.5	0.8	28	61	130
Deer Valley Road	North of Balfour Road	66.2	68.0	1.8	17	37	79
Deer Valley Road	South of Balfour Road	52.7	55.4	2.7	10	21	46
Empire Avenue	North of Lone Tree Way	59.5	58.8	-0.7	34	72	156
Empire Avenue	South of Lone Tree Way	55.5	57.3	1.8	34	74	159
Fairview Avenue	Lone Tree Way to Grant Street	58.7	59.7	1.0	15	33	71
Fairview Avenue	Grant Street to Sand Creek Road	58.1	59.0	0.9	14	30	64
Fairview Avenue	Sand Creek Road to San Jose Avenue	61.0	63.4	2.4	23	49	105
Fairview Avenue	San Jose Avenue to Central Boulevard	61.2	63.6	2.4	23	50	108

TABLE 3.11-15: TRAFFIC NOISE LEVELS - GENERAL PLAN BUILDOUT TO PLANNING AREA VS. EXISTING NOISE LEVELS

Roadway	Segment	Noise Levels (Ldn, dB) 100 Feet From Centerline[1]			Distance to General Plan Buildout to Planning Area Traffic Noise Contours, feet[2]		
		Existing	Buildout to Planning Area	Change (dB)	70 dB Ldn	65 dB Ldn	60 dB Ldn
Fairview Avenue	Central Boulevard to Balfour Road	60.8	62.5	1.7	16	34	74
Fairview Avenue	South of Balfour Road	55.8	60.4	**4.6**	17	37	79
Grant Street	West of Fairview Avenue	53.3	54.2	0.9	17	36	78
Grant Street	East of Fairview Avenue	58.9	60.0	1.1	35	76	164
Grant Street	West of Brentwood Boulevard	57.5	61.7	**4.2**	24	53	114
Griffith Lane	North of Balfour Road	51.8	52.4	0.6	17	36	77
Griffith Lane	South of Balfour Road	54.5	55.1	0.6	11	24	53
Highland Way	South of Sand Creek Road	56.6	57.8	1.2	8	17	37
Hillcrest Avenue	North of Lone Tree Way	60.6	62.2	1.6	128	275	592
Hillcrest Avenue	South of Lone Tree Way	54.2	58.7	4.5	30	66	142
Lone Tree Way	West of Hillcrest Avenue	62.6	64.2	1.6	50	108	232
Lone Tree Way	Hillcrest Avenue to SR 4	65.2	66.4	1.2	65	140	301
Lone Tree Way	SR 4 to Shady Willow Lane	67.7	69.8	**2.1**	29	63	137
Lone Tree Way	Shady Willow Lane to Empire Avenue	66.6	69.1	**2.5**	38	82	176
Lone Tree Way	Empire Avenue to Fairview Avenue	61.4	65.0	**3.6**	58	126	271
Lone Tree Way	Fairview Avenue to O'Hara Avenue	60.7	65.2	**4.5**	25	54	116
Lone Tree Way	O'Hara Avenue to Anderson Lane	64.4	69.1	**4.7**	20	43	92
Lone Tree Way	Anderson Lane to Brentwood Boulevard	64.2	68.6	**4.4**	18	39	85

TABLE 3.11-15: TRAFFIC NOISE LEVELS - GENERAL PLAN BUILDOUT TO PLANNING AREA VS. EXISTING NOISE LEVELS

Roadway	Segment	Noise Levels (Ldn, dB) 100 Feet From Centerline[1]			Distance to General Plan Buildout to Planning Area Traffic Noise Contours, feet[2]		
		Existing	Buildout to Planning Area	Change (dB)	70 dB Ldn	65 dB Ldn	60 dB Ldn
Lone Tree Way	East of Brentwood Boulevard	52.3	61.9	**9.6**	15	33	71
Marsh Creek Road	West of SR 4	59.8	66.9	**7.1**	24	52	112
Marsh Creek Road	East of SR 4	66.5	68.0	1.5	17	37	79
Minnesota Avenue	North of Sand Creek Road	54.0	55.0	1.0	6	13	27
Minnesota Avenue	Sand Creek Road to Balfour Road	55.2	56.5	1.3	7	15	32
O'Hara Avenue	North of Lone Tree Way	62.4	63.6	1.2	13	28	61
O'Hara Avenue	South of Lone Tree Way	57.9	60.8	**2.9**	34	74	159
O'Hara Avenue	North of Sand Creek Road	57.5	61.4	**3.9**	17	37	80
O'Hara Avenue	South of Sand Creek Road	59.4	62.6	**3.2**	18	38	82
Oak Street	East of Brentwood Boulevard	60.3	60.8	0.5	7	15	31
San Jose Avenue	West of Fairview Avenue	56.3	57.9	1.6	14	31	66
San Jose Avenue	East of Fairview Avenue	55.3	55.8	0.5	7	14	30
Sand Creek Road	SR 4 to Shady Willow Lane	64.8	67.8	**3.0**	41	87	188
Sand Creek Road	Shady Willow Lane to Fairview Avenue	60.4	63.1	2.7	30	65	141
Sand Creek Road	Fairview Avenue to Minnesota Avenue	60.2	61.8	1.6	14	30	64
Sand Creek Road	Minnesota Avenue to O'Hara Avenue	60.2	60.9	0.7	14	30	65
Sand Creek Road	O'Hara Avenue to Brentwood Boulevard	55.5	57.1	1.6	25	54	117
Sand Creek Road	East of Brentwood Boulevard	55.7	57.7	2.0	15	33	70
Shady Willow Lane	Lone Tree Way to Sand Creek	57.0	57.6	0.6	14	30	64

TABLE 3.11-15: TRAFFIC NOISE LEVELS - GENERAL PLAN BUILDOUT TO PLANNING AREA VS. EXISTING NOISE LEVELS

Roadway	Segment	Noise Levels (Ldn, dB) 100 Feet From Centerline[1]			Distance to General Plan Buildout to Planning Area Traffic Noise Contours, feet[2]		
		Existing	Buildout to Planning Area	Change (dB)	70 dB Ldn	65 dB Ldn	60 dB Ldn
	Road						
Slatten Ranch Road	North of Lone Tree Way	59.6	60.2	**0.6**	27	59	127
SR 4	North of Sand Creek Road	61.0	64.5	**3.5**			
SR 4	Sand Creek Road to Balfour Road	62.3	66.6	**4.2**			
SR 4	Balfour Road to Marsh Creek Road	63.2	67.6	**4.4**	64	137	295
Sunset Road	East of Brentwood Boulevard	56.8	61.7	**4.9**	21	46	99
Walnut Boulevard	North of Oak Street	64.8	65.3	0.5	13	28	60
Walnut Boulevard	Oak Street to Balfour Road	62.4	64.7	2.3	33	71	153
Walnut Boulevard	South of Balfour Road	58.5	61.9	**3.4**	84	180	388

Bold Underline *= Significant increase in noise.*

[1] *TRAFFIC NOISE LEVELS ARE PREDICTED AT THE CLOSEST SENSITIVE RECEPTORS OR AT A DISTANCE OF 100 FEET IN COMMERCIAL/RETAIL AREAS.*

[2] *NOISE CONTOURS ARE MEASURED FROM ROADWAY CENTERLINES AND ACCOUNT FOR AREAS WHICH ARE PRIMARILY SHIELED BY SOUND WALLS.*

Source: W-trans Transportation Engineers, Caltrans, j.c. brennan & associates, Inc., 2014

Buildout of the General Plan may contribute to an exceedance of the City's transportation noise standards and/or result in significant increases in traffic noise levels at existing sensitive receptors. As indicated by Table 3.11-14, the related traffic noise level increases under buildout of the General Plan to city limits are predicted to increase between 0.4 to 9.4 dB. Under buildout of the General Plan to the Planning Area, the increases would be 0.4 to 9.6 dB, as shown in Table 3.11-15.

General Plan Policies N 1-1 through N 1-4, N 1-6 through N 1-10, N 2-1, and Actions N 1a through N 1d, identified below, are intended to minimize exposure to excessive noise, including noise associated with traffic. Specifically, Policies N 1-1 and N 1-2 support noise-compatible land uses in the vicinity of traffic noise sources and require that new development and infrastructure projects be reviewed for consistency with the noise standards established in Table N-1. The proposed General Plan standards, required under Policies N 1-2 and Action N 1b, for exposure to traffic noise shown in Table 3.11-14 and Table 3.11-15, meet or exceed the noise level standards of the adopted General Plan shown in Table 3.11-11. Policy N 1-3 and N 1-4 and Actions N 1a and N 1c would ensure that new development mitigates potential noise impacts through incorporating the noise control treatments necessary to achieve acceptable noise levels. Policy N 1-7 establishes standards to determine the significance of increased noise levels associated with transportation. Policy N 1-5 requires the City to review and update the City's noise ordinance to address excessive noise from noise-generating land uses and to address vehicle noise to the extent allowed by State law; Action N 1a would ensure that the Municipal Code, including the updated noise ordinance, is consistent with the noise standards established in the General Plan. Policy N 1-9 would limit truck traffic to specific routes to reduce potential noise impacts on residential streets. Policy N 1-10 would encourage working with Caltrans to ensure that adequate noise studies are prepared and that noise mitigation measures are considered in State transportation projects. While implementation of the proposed policies and actions of the General Plan will reduce noise and land use compatibility impacts from vehicular traffic noise sources and would ensure that new development is designed to include noise-attenuating features, some traffic noise impacts cannot be mitigated to a less-than-significant level due the proximity of sensitive receivers to major roadways, and because noise attenuation may not be feasible in all circumstances. There would be a significant increase in ambient noise levels with buildout of the General Plan as shown in Table 3.11-14 and Table 3.11-15. The proposed General Plan would have a **significant and unavoidable** impact relative to traffic noise.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy N 1-1: Ensure the noise compatibility of existing and future development when making land use planning decisions.

Policy N 1-2: Require development and infrastructure projects to be consistent with the Land Use Compatibility for Community Noise Environments standards indicated in Table N-1 to ensure acceptable noise levels for existing and future development.

Policy N 1-3: Require new development to mitigate excessive noise through best practices, including building location and orientation, building design features, placement of noise-generating equipment away from sensitive receptors, shielding of noise-generating equipment, placement of noise-tolerant features between noise sources and sensitive receptors, and use of noise-minimizing materials such as rubberized asphalt.

Policy N 1-4: *Require mixed-use projects to minimize noise exposure for indoor areas of nearby residential areas through the use of noise attenuating building materials, engineering techniques, and site design practices. Site design practices may include locating mechanical equipment, loading bays, parking lots, driveways, and trash enclosures away from residential uses, and providing noise-attenuating screening features on-site.*

Policy N 1-6: *Require acoustical studies for new developments and transportation improvements that affect noise-sensitive uses such as schools, hospitals, libraries, group care facilities, convalescent homes, and residential areas.*

Policy N 1-7: *For projects that are required by the California Environmental Quality Act (CEQA) to analyze noise impacts, the following criteria shall be used to determine the significance of those impacts:*

Stationary and Non-Transportation Noise Sources

- *A significant impact will occur if the project results in an exceedance of the noise level standards contained in this element, or the project will result in an increase in ambient noise levels by more than 3 dB, whichever is greater.*

Transportation Noise Sources

- *Where existing traffic noise levels are less than 60 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +5 dB L_{dn} increase in roadway noise levels will be considered significant; and*

- *Where existing traffic noise levels range between 60 and 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +3 dB L_{dn} increase in roadway noise levels will be considered significant; and*

- *Where existing traffic noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a + 1.5 dB L_{dn} increase in roadway noise levels will be considered significant.*

Policy N 1-8: *Support noise-compatible land uses along existing and future roadways, including County, State, and Federal routes.*

Policy N 1-9: *Local truck traffic, including loading and unloading, shall be limited to specific routes, times, and speeds appropriate to each zoning district.*

Policy N 1-10: *Work with Caltrans to ensure that adequate noise studies are prepared and alternative noise mitigation measures are considered in State transportation projects.*

Policy N 2-1: *Recognizing that existing and future traffic noise along the State Route 4 corridor is an area of potential land use conflict for existing and future development, reasonable use of this land will be allowed with an exterior noise exposure level not exceeding 65 dB Ldn. New development that includes noise-sensitive uses (i.e., residential) along the State Route 4 corridor should incorporate appropriate noise attenuation measures in order to maintain interior noise levels of 45 dB Ldn or less. Application of this noise standard is intended to provide for reasonable exterior noise levels while discouraging the use of excessively high and/or unattractive sound walls.*

ACTIONS

Action N 1a: Update Chapter 9.32 and Title 17 of the Brentwood Municipal Code to ensure that the noise standards are consistent with this element, including Tables N-1 and N-2, and to require new residential, mixed-use with a residential component, and other noise-sensitive development to be designed to minimize noise exposure to noise sensitive uses through incorporation of site planning and architectural techniques.

Action N 1b: Review new development projects for compliance with the noise requirements established in this element, including the standards established in Tables N-1 and N-2. Where necessary, require mitigation measures to achieve the noise standards.

Action N 1c: Require acoustical studies for all new discretionary projects, including those related to development and transportation, which have the potential to generate noise impacts which exceed the standards identified in this element. The studies shall include representative noise measurements, estimates of existing and projected noise levels, and mitigation measures necessary to ensure compliance with this element and relevant noise standards in the Brentwood Municipal Code.

Action N 1d: Coordinate with Caltrans, the cities of Antioch and Oakley, and Contra Costa County, when necessary, to ensure that these agencies obtain City concurrence prior to initiating any noise mitigation or other project affecting Brentwood.

Impact 3.11-2: General Plan implementation may result in exposure to excessive railroad noise sources (Less than Significant)

Table 3.11-6 indicates that the 60 dB Ldn railroad noise contours for the UP and BNSF railroads may extend up to 290 feet or 632 feet from the railroad centerline, respectively. Future development located along these railroad lines could therefore be exposed to unacceptable exterior noise levels.

General Plan Policies N 1-1 through N 1-4, N 1-6 through N 1-10, N 2-1, and Actions N 1a through N 1c, identified below, are intended to minimize exposure to excessive noise, including noise associated with railroad operations. Specifically, Policies N 1-1 and N 1-2 support noise-compatible land uses in the vicinity of railroad noise sources and require that new development projects be reviewed for consistency with the noise standards established in Table N-1. The proposed General Plan standards required under Policies N 1-2 and Action N 1b, for exposure to railroad noise shown in Table 3.11-6, meet or exceed the noise level standards of the adopted General Plan shown in Table 3.11-11. Policy N 1-3 and N 1-4 and Actions N 1a and N 1c would ensure that new development mitigates potential noise impacts through incorporating the noise control treatments necessary to achieve acceptable noise levels. Action N 1a would ensure that the Municipal Code, including the new noise ordinance, is consistent with the noise standards established in the General Plan.

Implementation of these General Plan policies and actions would ensure that development allowed under the proposed General Plan is not exposed to noise levels associated with railroad operations in excess of the City's established standards. This is a **less than significant** impact.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy N 1-1: Ensure the noise compatibility of existing and future development when making land use planning decisions.

Policy N 1-2: Require development and infrastructure projects to be consistent with the Land Use Compatibility for Community Noise Environments standards indicated in Table N-1 to ensure acceptable noise levels for existing and future development.

Policy N 1-3: Require new development to mitigate excessive noise through best practices, including building location and orientation, building design features, placement of noise-generating equipment away from sensitive receptors, shielding of noise-generating equipment, placement of noise-tolerant features between noise sources and sensitive receptors, and use of noise-minimizing materials such as rubberized asphalt.

Policy N 1-4: Require mixed-use projects to minimize noise exposure for indoor areas of nearby residential areas through the use of noise attenuating building materials, engineering techniques, and site design practices. Site design practices may include locating mechanical equipment, loading bays, parking lots, driveways, and trash enclosures away from residential uses, and providing noise-attenuating screening features on-site.

Policy N 1-6: Require acoustical studies for new developments and transportation improvements that affect noise-sensitive uses such as schools, hospitals, libraries, group care facilities, convalescent homes, and residential areas.

ACTIONS

Action N 1a: Update Chapter 9.32 and Title 17 of the Brentwood Municipal Code to ensure that the noise standards are consistent with this element, including Tables N-1 and N-2, and to require new residential, mixed-use with a residential component, and other noise-sensitive development to be designed to minimize noise exposure to noise sensitive uses through incorporation of site planning and architectural techniques.

Action N 1b: Review new development projects for compliance with the noise requirements established in this element, including the standards established in Tables N-1 and N-2. Where necessary, require mitigation measures to achieve the noise standards.

Action N 1c: Require acoustical studies for all new discretionary projects, including those related to development and transportation, which have the potential to generate noise impacts which exceed the standards identified in this element. The studies shall include representative noise measurements, estimates of existing and projected noise levels, and mitigation measures necessary to ensure compliance with this element and relevant noise standards in the Brentwood Municipal Code.

Impact 3.11-3: Implementation of the General Plan could result in the generation of excessive stationary noise sources (Less than Significant)

Implementation of the General Plan could result in the future development of land uses that generate noise levels in excess of applicable City noise standards for non-transportation noise sources. Such land uses may include commercial area loading docks, industrial uses, HVAC equipment, car washes, daycare facilities, auto repair, and recreational uses. While the General Plan does not specifically propose any new noise generating uses, the Land Use Map includes industrial land use designations, which may result in new noise sources. Specific land uses that would be located in the city are not known at this time. Additionally, noise from existing stationary sources, as identified in the background section of this chapter, will continue to impact noise-sensitive land uses in the vicinity. New projects which may include stationary noise sources such as automotive and truck repair facilities, tire installation centers, car washes, loading docks, corporation yards, parks, and play fields may create noise levels in excess of the City's standards.

The General Plan includes policies and actions that are intended to reduce noise associated with stationary sources (listed below). Specifically, policies N 1-1, N 1-3, N 1-4, N 1-5, N 1-6, N 1-7, N 1-13, N 1-14, N-15, N-16, N 2-2, and Actions N 1a, N 1b, N 1c, and N 2a would reduce noise associated with stationary sources. Implementation of the proposed policies and actions of the General Plan will reduce noise impacts from stationary noise sources to a **less than significant** level.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy N 1-1: Ensure the noise compatibility of existing and future development when making land use planning decisions.

Policy N 1-3: Require new development to mitigate excessive noise through best practices, including building location and orientation, building design features, placement of noise-generating equipment away from sensitive receptors, shielding of noise-generating equipment, placement of noise-tolerant features between noise sources and sensitive receptors, and use of noise-minimizing materials such as rubberized asphalt.

Policy N 1-4: Require mixed-use projects to minimize noise exposure for indoor areas of nearby residential areas through the use of noise attenuating building materials, engineering techniques, and site design practices. Site design practices may include locating mechanical equipment, loading bays, parking lots, driveways, and trash enclosures away from residential uses, and providing noise-attenuating screening features on-site.

Policy N 1-5: Periodically review and update, as necessary, Chapter 9.32 (Noise Regulations) of the Brentwood Municipal Code in order to address issues such as excessive noise from commercial, industrial, and other noise generating land uses, as well as vehicle noise, to the extent allowed by State law.

Policy N 1-6: Require acoustical studies for new developments and transportation improvements that affect noise-sensitive uses such as schools, hospitals, libraries, group care facilities, convalescent homes, and residential areas.

Policy N 1-7: For projects that are required by the California Environmental Quality Act (CEQA) to analyze noise impacts, the following criteria shall be used to determine the significance of those impacts:

Policy N 1-13: Control non-transportation related noise from site specific noise sources to the standards shown in Table N-2.

Policy N 1-14: Ensure that new development does not result in indoor noise levels exceeding 45 dBA Ldn for residential uses.

Policy N 1-15: Require construction activities to comply with standard best practices (see Action N 1e).

Policy N 1-16: Temporary special events including, but not limited to, festivals, concerts, carnivals, rodeos, and other similar activities may be allowed to exceed the noise standards established in this General Plan and the standards established by Chapter 9.32 of the Brentwood Municipal Code through issuance of a temporary use permit (see section 9.32.080 of the Brentwood Municipal Code).

Policy N 2-2: Recognizing that agricultural activities are important to Brentwood's economic base and that agricultural operations are characterized by increased noise levels from the use of tractors, heavy equipment, crop dusting, agricultural products processing, and other supporting equipment and activities, new noise sensitive land uses that interface with agricultural lands must acknowledge and accept these increased noise levels as part of Brentwood's rural heritage and lifestyle.

ACTIONS

Action N 1a: Update Chapter 9.32 and Title 17 of the Brentwood Municipal Code to ensure that the noise standards are consistent with this element, including Tables N-1 and N-2, and to require new residential, mixed-use with a residential component, and other noise-sensitive development to be designed to minimize noise exposure to noise sensitive uses through incorporation of site planning and architectural techniques.

Action N 1b: Review new development projects for compliance with the noise requirements established in this element, including the standards established in Tables N-1 and N-2. Where necessary, require mitigation measures to achieve the noise standards.

Action N 1c: Require acoustical studies for all new discretionary projects, including those related to development and transportation, which have the potential to generate noise impacts which exceed the standards identified in this element. The studies shall include representative noise measurements, estimates of existing and projected noise levels, and mitigation measures necessary to ensure compliance with this element and relevant noise standards in the Brentwood Municipal Code.

Action N 2a: As a condition of project approval, require new development that introduces sensitive noise receptors near agricultural lands or operations to acknowledge and comply with Chapter 8.01 (Right to Farm) of the Brentwood Municipal Code.

Impact 3.11-4: General Plan implementation may result in an increase in construction noise sources (Less than Significant)

New development, maintenance of roadways, and installation of public utilities and infrastructure generally require construction activities. These activities include the use of heavy equipment and impact tools. Table 3.11-16 provides a list of the types of equipment which may be associated with construction activities, and their associated noise levels.

TABLE 3.11-16: CONSTRUCTION EQUIPMENT NOISE

TYPE OF EQUIPMENT	PREDICTED NOISE LEVELS, LMAX DB				DISTANCES TO NOISE CONTOURS (FEET)	
	NOISE LEVEL AT 50'	NOISE LEVEL AT 100'	NOISE LEVEL AT 200'	NOISE LEVEL AT 400'	70 DB LMAX CONTOUR	65 DB LMAX CONTOUR
Backhoe	78	72	66	60	126	223
Compactor	83	77	71	65	223	397
Compressor (air)	78	72	66	60	126	223
Concrete Saw	90	84	78	72	500	889
Dozer	82	76	70	64	199	354
Dump Truck	76	70	64	58	100	177
Excavator	81	75	69	63	177	315
Generator	81	75	69	63	177	315
Jackhammer	89	83	77	71	446	792
Pneumatic Tools	85	79	73	67	281	500

Source: Roadway Construction Noise Model User's Guide. Federal Highway Administration. FHWA-HEP-05-054. January 2006. j.c. brennan & associates, Inc. 2014.

Activities involved in construction would typically generate maximum noise levels ranging from 85 to 90 dB at a distance of 50 feet. Construction could result in periods of significant ambient noise level increases and the potential for annoyance. However, the proposed General Plan includes policies and actions that are intended to reduce noise associated with construction noise (listed below). Specifically, policy N 1-15 and Action N 1e would reduce noise associated with construction noise. Implementation of the proposed policies and actions of the General Plan will reduce noise impacts from construction noise to a **less than significant** level.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy N 1-15: Require construction activities to comply with standard best practices (see Action N 1e).

ACTIONS

Action N 1e: During the environmental review process, determine if proposed construction will constitute a significant impact on nearby residents and, if necessary, require mitigation measures in addition to the standard best practice controls. Suggested best practices for control of construction noise include:

1. *Construction period shall be less than 12 months.*

2. *Noise-generating construction activities, including truck traffic coming to and from the construction site for any purpose, shall be limited to between the hours of 7:00 am and 6:00 pm on weekdays, and between 8:00 am and 5:00 pm on Saturdays. No construction shall occur on Sundays or City holidays.*

3. *All equipment driven by internal combustion engines shall be equipped with mufflers, which are in good condition and appropriate for the equipment.*

4. *The construction contractor shall utilize "quiet" models of air compressors and other stationary noise sources where technology exists.*

5. *At all times during project grading and construction, stationary noise-generating equipment shall be located as far as practicable from sensitive receptors and placed so that emitted noise is directed away from residences.*

6. *Unnecessary idling of internal combustion engines shall be prohibited.*

7. *Construction staging areas shall be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction activities, to the extent feasible.*

8. *The required construction-related noise mitigation plan shall also specify that haul truck deliveries are subject to the same hours specified for construction equipment.*

9. *Neighbors located adjacent to the construction site shall be notified of the construction schedule in writing.*

10. *The construction contractor shall designate a "noise disturbance coordinator" who will be responsible for responding to any local complaints about construction noise. The disturbance coordinator shall be responsible for determining the cause of the noise complaint (e.g., starting too early, poor muffler, etc.) and instituting reasonable measures as warranted to correct the problem. A telephone number for the disturbance coordinator shall be conspicuously posted at the construction site.*

Impact 3.11-5: General Plan implementation may result in construction vibration (Less than Significant)

Construction activities facilitated by the proposed General Plan may include demolition of existing structures, site preparation work, excavation of below grade levels, foundation work, pile driving, and new building erection. Demolition for an individual site may last several weeks and at times may produce substantial vibration. Excavation for underground levels may also occur on some project sites and vibratory pile driving could be used to stabilize the walls of the excavated area. Piles or drilled caissons may also be used to support building foundations.

Heavy tracked vehicles (e.g., bulldozers or excavators) can generate distinctly perceptible groundborne vibration levels when this equipment operates within approximately 25 feet of sensitive land uses. Impact pile drivers can generate distinctly perceptible groundborne vibration levels at distances up to about 100 feet, and may exceed building damage thresholds within 25 feet of any building, and within 50-100 feet of a historical building, or building in poor condition. Other construction activities, such as caisson drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.) may also potentially generate substantial vibration in the immediate vicinity.

Depending on the proximity of existing structures to each construction site, the structural soundness of the existing buildings, and the methods of construction used, vibration levels may be high enough to damage existing structures. Given the scope of the General Plan and the close proximity of many existing structures, groundborne vibration impacts would be potentially significant.

As with any type of construction, vibration levels may at times be perceptible. However, construction phases that have the highest potential of producing vibration (pile driving and use of jackhammers and other high power tools) would be intermittent and would only occur for short periods of time for any individual project site.

General Plan Action N 1e would ensure administrative controls such as notifying neighbors of scheduled construction activities and scheduling construction activities with the highest potential to produce perceptible vibration to hours with the least potential to affect nearby businesses, in order to ensure that perceptible vibration can be kept to a minimum, and as such would not result in a significant impact with respect to perception. Therefore, the potential for significant impacts associated with construction vibration is **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy N 1-15: Require construction activities to comply with standard best practices (see Action N 1e).

ACTIONS

Action N 1e: During the environmental review process, determine if proposed construction will constitute a significant impact on nearby residents and, if necessary, require mitigation measures in addition to the standard best practice controls. Suggested best practices for control of construction noise include:

1. *Construction period shall be less than 12 months.*

2. *Noise-generating construction activities, including truck traffic coming to and from the construction site for any purpose, shall be limited to between the hours of 7:00 am and 6:00 pm on weekdays, and between 8:00 am and 5:00 pm on Saturdays. No construction shall occur on Sundays or City holidays.*

3. *All equipment driven by internal combustion engines shall be equipped with mufflers, which are in good condition and appropriate for the equipment.*

4. *The construction contractor shall utilize "quiet" models of air compressors and other stationary noise sources where technology exists.*

5. *At all times during project grading and construction, stationary noise-generating equipment shall be located as far as practicable from sensitive receptors and placed so that emitted noise is directed away from residences.*

6. *Unnecessary idling of internal combustion engines shall be prohibited.*

7. *Construction staging areas shall be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction activities, to the extent feasible.*

8. *The required construction-related noise mitigation plan shall also specify that haul truck deliveries are subject to the same hours specified for construction equipment.*

9. *Neighbors located adjacent to the construction site shall be notified of the construction schedule in writing.*

10. *The construction contractor shall designate a "noise disturbance coordinator" who will be responsible for responding to any local complaints about construction noise. The disturbance coordinator shall be responsible for determining the cause of the noise complaint (e.g., starting too early, poor muffler, etc.) and instituting reasonable measures as warranted to correct the problem. A telephone number for the disturbance coordinator shall be conspicuously posted at the construction site.*

Impact 3.11-6: General Plan implementation may result in exposure to groundborne vibration (Less than Significant)

Development facilitated by the General Plan could expose persons to excessive groundborne vibration levels attributable to trains. The proposed locations of buildings and their specific sensitivity to vibration are not known at this time; however, such uses located in close proximity to railroad tracks could be exposed to ground vibration levels exceeding FTA guidelines.

The proposed General Plan includes Policy N 1-6 which requires that individual development projects undergo project-specific environmental review and address potential vibration impacts associated with railroad operations. If project-level significant vibration impacts are identified, specific mitigation measures will be required under CEQA. The implementation of this policy would limit potential groundborne vibrations associated with railroad operations to a **less than significant** level.

Impact 3.11-7: General Plan implementation may result in cumulative noise impacts (Significant and Unavoidable)

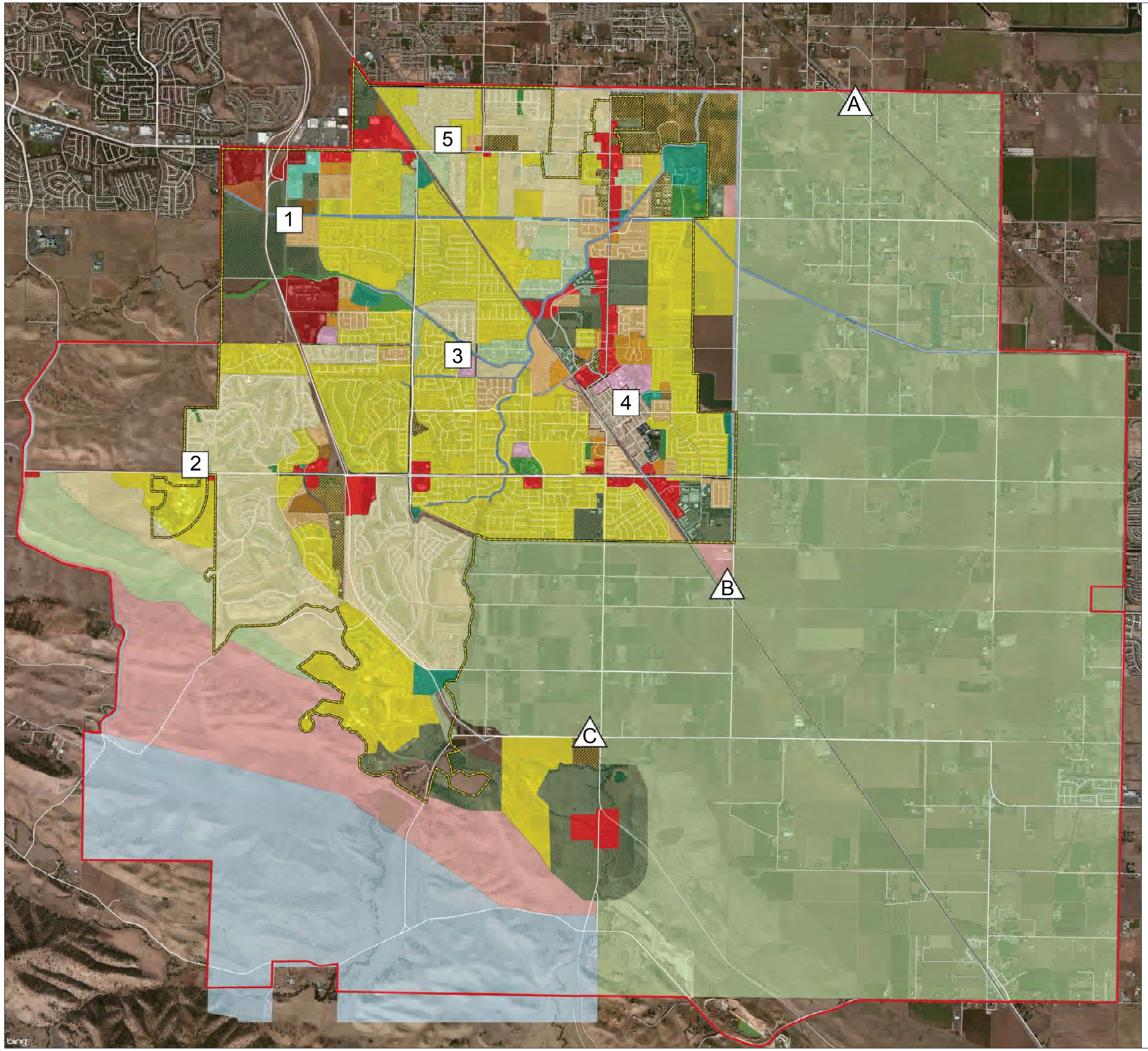
Tables 3.11-14 and 3.11-15 show the existing and cumulative noise levels associated with traffic on the local roadway network, including projects within the city and the Planning Area. Cumulative conditions include traffic due to buildout of the General Plan in addition to pass through traffic from other jurisdictions. The tables also show the estimated noise level increases which may occur under cumulative conditions.

Cumulative conditions would contribute to an exceedance of the City's transportation noise standards and result in significant increases in traffic noise levels at existing sensitive receptors.

The General Plan includes policies and actions that are intended to reduce noise increases associated with traffic. Specifically, policies N 1-1 through N 1-4, N 1-6 through N 1-10, N 2-1, and Actions N 1a through N 1d would reduce noise increases associated with traffic, as described in Impact 3.11-1. As described in Impact 3.11-1, some traffic noise impacts cannot be mitigated to a less-than-significant level due the proximity of sensitive receivers to major roadways, and because noise attenuation may not be feasible in all circumstances. As a result, this is a ***significant and unavoidable*** cumulative impact.

BRENTWOOD GENERAL PLAN UPDATE

Figure 3.11-1: Noise Measurement Locations



General Plan Land Use Designation

- Agricultural Conservation
- Creeks
- Downtown
- Downtown Specific Plan Boundary
- Existing Schools
- Ranchette Estate
- Very Low Density Residential
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Very High Density Residential
- General Commercial
- Regional Commercial
- Mixed-Use
- Mixed-Use Business Park
- Professional Office
- Parks
- Permanent Open Space
- Semi-Public Facility
- Public Facility
- Urban Reserve

Planning Boundaries

- City Boundary
- Planning Area

Noise Meaurement Sites

- Continuous (24-hour) Noise Measurement Site
- Short-Term Noise Measurement Site

N

1
Miles

Data sources: City of Brentwood GIS; Contra Costa County GIS; J.C. Brennan & Associates, February 2013.
Map date: February 28, 2013.

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

Public services such as fire and police protection are vital to maintaining a safe and healthy community. Educational services serve as a foundation for providing citizens with the skills and resources to excel today and in the future. There are many other public services that are important to a community, such as parks and recreational opportunities, libraries, museums, hospitals, and other healthcare facilities.

This section provides a background discussion and analysis of fire protection services, police services, schools, parks and recreational facilities, libraries, and other community facilities and services. This section is organized with an existing setting, regulatory setting, and impact analysis.

Utilities services, including water, sewer, and solid waste disposal are addressed in Section 3.14 of this Draft EIR.

3.12.1 EXISTING CONDITIONS

FIRE PROTECTION SERVICES

The East Contra Costa Fire Protection District, which was formed in 2002, provides suppression, dispatches emergency services for a 250-mile area, (including Brentwood), and is the second largest fire service area in the County. The ECCFPD provides firefighting personnel and emergency medical service (basic life support) to the residents and businesses in Bethel Island, Brentwood, Byron, Discovery Bay, Knightsen, Marsh Creek, Morgan Territory, and Oakley. The ECCFPD was formed as a consolidation of three fire districts.

OPERATIONS DIVISION

The largest Division within the East Contra Costa Fire Protection District is the Fire Suppression (Operations) Division. It is responsible for emergency medical services (EMS), fire suppression, rescue, hazardous conditions, and all other emergency and non-emergency calls for service.

The Operations Division is responsible for ensuring that the citizens are served through an efficient and effective system of services designed to protect life, environment, and property. Part of this system includes staffing and maintaining three fire stations located in all of the district's major regions.

More than 75% of the calls for service are responses to medical emergencies. Firefighting related calls equal 10% of the overall responses. The remaining calls range from hazardous material responses, to rescues, and public assist requests.

The Fire Suppression element of the Operations Division is divided into three platoons; A, B, & C Shifts. These Shifts are supervised by a Battalion Chief who reports directly to the Fire Chief. The Fire District personnel assigned to these shifts consist of Fire Captains, Fire Engineers, and Firefighters. These people are a highly professional, trained force of men and women who respond to approximately 6,000+ calls-for-service annually.

ECCFPD currently has 39 employees within the Operations Division: three Battalion Chiefs, 12 Captains, 12 Engineers, and 12 Firefighters. As of May 1, 2013, there will be a total of 48 personnel: 3 Chiefs, 15 Captains, 15 Engineers, and 15 Firefighters.

Each fire protection district earns a rating from the Insurance Service Office (ISO). This rating, known as a Public Protection Classification (PPC), is utilized by many insurance providers to calculate insurance premiums within the district. Ratings range from 1 to 10. Class 1 generally represents superior property fire protection, and Class 10 indicates that the area's fire-suppression program does not meet ISO's minimum criteria.

The PPC ratings are calculated on the following factors:

- Fire alarm and communication systems, including telephone systems, telephone lines, staffing, and dispatching systems;
- The fire department, including equipment, staffing, training, and geographic distribution of fire companies; and
- The water-supply system, including the condition and maintenance of hydrants, and a careful evaluation of the amount of available water compared with the amount needed to suppress fires.

ECCFPD, within the Brentwood city limits, presently has an Insurance Service Office (ISO) rating of four (4).

TRAINING DIVISION

The Training Division is responsible for the delivery of training programs for the professional development of Fire District employees. The Division prepares the employees to provide an effective response force to mitigate emergencies and potential emergencies. The Division's programs include professional development, automatic and mutual aid training, communications management, and occupational safety.

Training activities are scheduled on a daily basis. The Division's Chief in charge of training administers the scheduling and delivery of training. The District strives to deliver a wide range of training, which includes State and Federally mandated topics, as well as discretionary subjects.

FIRE PREVENTION BUREAU

The East Contra Costa Fire Prevention Bureau has the responsibility and authority to enter, investigate, and perform routine fire inspections of all buildings, structures, and properties in the District with the exception single and multi-family dwellings in which the owner of the property resides.

The Bureau's primary responsibility is enforcement of the Uniform Fire Code and other local fire safety regulations. This includes the inspection of all Life Hazard Use Properties (i.e., gas stations, schools, nursing homes, daycare facilities, auto repair/auto body shops, places of assembly, and

large retail operations) and the inspection of Non-Life Hazard businesses, offices, and multi-family residences.

Additional duties of the Fire Prevention Bureau include: complaint investigations, fire safety permit control, issuance of violation and penalty notices for failure to comply with the law, and Fire Prevention Week activities.

PUBLIC EDUCATION DIVISION

The Public Education Division of the East Contra Costa Fire Protection District is responsible for providing the public with information and resources to prevent not only fires, but also to reduce or prevent injuries and death from causes unrelated to fire. Each year the ECCFPD firefighters are dispatched to more emergency medical service calls for unintentional injuries than for actual fire-related emergencies.

Fire Stations

The ECCFPD operates five fire stations within its service area, as shown on Figure 3.12-1.

- Station 52, at 201 John Muir Parkway, Brentwood
- Station 54, at 739 First Street, Brentwood
- Station 59, at 1685 Bixler Road, Discovery Bay
- Station 93, at 530 O'Hara Avenue, Oakley
- Station 94, at 15 A Street, Knightsen

The city of Brentwood is served primarily by Station 52 and Station 54.

POLICE PROTECTION SERVICES

The Brentwood Police Department provides law enforcement and police protection services throughout the city. Established in 1948, the Brentwood Police Department is a full service law enforcement agency that is charged with the enforcement of local, State, and Federal laws, and with providing 24-hour protection of the lives and property of the public. The Police Department functions both as an instrument of public service and as a tool for the distribution of information, guidance, and direction.

The Brentwood Police Department services an area of approximately 14 square miles. The city is divided up into four separate, geographical beats, as shown in Figure 3.12-2. The Department currently has 62 sworn police officers and another 17 civilian support staff. In addition to the permanent staff, the department has approximately 20 volunteers who are citizens of the community and assist with day to day operations.

FIELD OPERATIONS DIVISION

The Field Operations Division is one of the Police Department's two divisions. The Field Operations Division is responsible for front line law enforcement services. The Field Operations Division command staff consist of a Captain who oversees the Field Operations Division, two Field Lieutenants who are the day and evening Watch Commanders, six Field teams that are responsible

for calls for service, the Traffic Safety Unit, the School Resource Officers assigned to the schools, the K-9 Unit, the Field Training Officer Program, Community Service Officers deployed in the field as support staff, and S.W.A.T.

Personnel assigned to the Field Operations Division are tasked with carrying out the Brentwood Police Department's mission of protecting and enhancing the quality of life in the community through uncompromised dedication, professionalism, integrity, and innovative police services. In this effort, and in alignment with the Brentwood Police Department's Strategic Plan, the Field Operations Division is working to keep the city of Brentwood and the people in the community safe from harm, and to maintain their quality of life. The Field Operation Division's priorities are to reduce crime, improve traffic safety, and build community partnerships. The Field Operations Division is a highly responsive Field force that is visible in the community and conducts aggressive, proactive law enforcement activity in the community.

SUPPORT SERVICES DIVISION

The Support Services Division is commanded by a Captain and has two Bureaus, Administration and Investigations, each directed by a Lieutenant. The Administration Bureau responsibility includes records, emergency services, recruiting and hiring, training, special projects, special event coordination, financial accounting, and crime prevention services. The Investigations Bureau includes major crimes and special operations investigation units, City planning liaison, the property unit, and the Chaplain's program.

The Support Services Division provides support and assistance to the Field Operations Division in order to ensure that officers in the field can provide the highest quality service to residents. The detectives provide expertise to patrol and follow-up on major cases such as domestic violence, homicides, robberies, and other crimes of violence. Detectives also initiate their own investigations especially in the areas of narcotics, vice, child abuse, and sex crimes. The records personnel staff the front counter and provide document processing for the entire Department. Records staff are usually the people who answer the phone when a citizen calls into the Police Department. The property unit maintains found property, property held for safekeeping and as evidence. The training sergeant is responsible for recruiting and facilitating the hiring of all department personnel providing the best people for the Brentwood Police Department.

TRAFFIC UNIT

The Police Department's Traffic Safety Unit (TSU) was developed in 1997 and provides an important role toward reducing fatal and injury traffic collisions in Brentwood. The TSU unit is currently comprised of three officers and a Sergeant. The TSU's mission is to make Brentwood's roadways safer for all vehicles, bicyclists, and pedestrians. The Officers in the TSU are responsible for investigating traffic collisions, issuing traffic citations, and responding to traffic complaints.

The TSU is also involved in traffic education programs, commercial vehicle enforcement, and participate in special enforcement campaigns. Some of the campaigns include: Click It or Ticket, Avoid the 25 (DUI enforcement) and VSET (Stolen Vehicle Task Force).

NEIGHBORHOOD WATCH PROGRAM

Neighborhood Watch is a community-law enforcement partnership and crime prevention program. Through this partnership, Brentwood residents learn how to improve their safety, the security of their property, and foster new relationships with their neighbors and members of the Brentwood Police Department. The Neighborhood Watch Program is one aspect of community policing that focuses on crime prevention, public education and awareness, and community problem solving techniques. This community-law enforcement partnership balances reactive police responses to calls for service with proactive problem solving that focuses on quality of life issues. It is the goal of the Neighborhood Watch Program to empower the community, enhance personal and residential safety, maintain open lines of communication with the Police Department, and improve the quality of life in the city of Brentwood.

SCHOOL RESOURCE OFFICER PROGRAM

Currently, there are two police officers assigned as School Resource Officers (SRO's). Additionally, there is one officer assigned as the Youth Liaison Officer. The primary function of the SRO's is building relationships with school officials and students to maintain a safe learning environment for students. This is accomplished by the SRO's being highly visible on the campuses, especially when the students are out of class, such as before and after school and during the lunch hours. The SRO's handle police calls for service on the campuses and work with the schools and the students in identifying potential problems.

The Youth Liaison Officer is responsible for a number of juvenile related programs within the Police Department and the City. These include the Police Activities League, which operates after school as a daycare at the three middle schools as well as other programs and activities for youth such as: Juvenile Diversion, a program for first time youth offenders; the Police Explorers Program, for youth interested in law enforcement; and Liaison for the City's Youth Commission.

Crimes by Category in Brentwood

Statistics on the number of crimes by category of crime in Brentwood during each year from 2007 to 2012, as reported by the Federal Bureau of Investigation (FBI) Criminal Justice Information Services Division, are shown in Table 3.12-1 below.

Table 3.12-1 Crimes by Category						
Category	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Violent Crimes	124	128	119	112	118	99
Homicide	0	0	1	0	0	1
Forcible Rape	9	6	5	6	12	4
Robbery	44	47	46	41	46	42
Aggravated Assault	71	75	67	65	60	52
Property Crimes	1,271	1162	928	1,117	1,080	1,185
Burglary	259	187	193	214	249	240
Larceny-Theft	880	874	640	796	771	835
Vehicle Theft	132	101	95	107	60	110
Arson	27	8	15	21	18	11

SOURCE: FEDERAL BUREAU OF INVESTIGATION, CRIMINAL JUSTICE INFORMATION SERVICES DIVISION, OFFENSES KNOWN TO LAW ENFORCEMENT TABLES (2007, 2008, 2009, 2010, 2011, AND 2012).

As shown in the table, the majority of crimes committed in Brentwood consist of non-violent property crimes, primarily larceny-theft. Between 2007 and 2012, there were two homicides reported in Brentwood.

Police Response Times

Response times are an important benchmark of police service. Response times can vary greatly depending on the size of the city and department, geographical location, and levels of crime. Smaller cities usually have faster response times, due simply to the geography. Calls for service are prioritized into two general categories.

- Priority 1 calls involve an immediate threat to life or crimes that are in progress.
- Priority 2 calls are high priority but do not elevate to the level of an emergency.

Average response times for Priority 1 and Priority 2 calls for police services in Brentwood between 2007 and 2012 are shown in Table 3.12-2 below.

Table 3.12-2: Average Police Response Times (Minutes and Seconds)		
Year	**Priority 1: Emergency**	**Priority 2: Priority Response**
2007	4:42	6:08
2008	4:31	5:44
2009	4:45	5:45
2010	4:44	5:54
2011	4:48	5:46
2012	4:50	5:32

SOURCE: BRENTWOOD POLICE DEPARTMENT 2013 BENCHMARK REPORT

PARKS AND RECREATIONAL FACILITIES

Types of Parks

Community parks: Community parks are generally 15 to 25 acres in size, and include areas for active sports as well as space for family and group activities, such as picnicking. Community parks are larger in size than neighborhood parks and serve to fulfill the active and passive recreational needs of multiple neighborhoods. The community park serves the needs of local neighborhoods by providing a close to home site for more active recreation that is not typically suitable or physically possible in a neighborhood park (i.e. formal sports fields and courts with night lighting). Community parks and sports parks are where most organized activities provided by the Parks and Recreation Department and various league sports are intended to occur.

Neighborhood parks: Neighborhood parks serve as the focal point of neighborhood communities, the hub for both physical and social activities in a recreational setting that should be primarily passive. Appropriately designed neighborhood parks act as "pulse points" within the city. They are spaces that develop a sense of place while at the same time evolve to reflect the neighborhood they represent. Neighborhood parks act as critical building blocks of the city's image and assist in developing an overall sense of community and security. They also serve as critical nodes and access points in the city-wide green space network. Neighborhood parks are generally 5 to 7 acres. Amenities at neighborhood parks may include ball fields, basketball, volleyball, bocce ball, and tennis courts, small picnic areas, playground equipment, restroom facilities, water play features, and barbeques.

Sports parks: Sports parks are the largest of the park types for Brentwood's city-wide green space network. They are intended to consolidate high use, heavily programmed sport fields, multi-use courts and large scale facilities (such as gymnasiums or aquatic centers). As such, there are typically fewer sports parks than other types of parks within a city-wide green space network; but, they are strategically located to ensure that they serve the greatest service radius possible. Siting for sports parks is critical. Sports parks are oriented to teen and adult league sports, whereas community parks and school parks better accommodate youth sports such as T-ball. Sports park sites are generally 40 to 140 acres in size, with an average of 70 acres.

Special use parks: The "Special Use Parks" classification was developed by the City to allow for flexibility in providing recreational resources throughout the city-wide green space network. This classification is intended to accommodate special circumstances, unique site characteristics, etc. in park, trail, and recreation resources. These types of resources add diversity to the green space network and accommodate a variety of "non-traditional" recreation amenities beyond the standard neighborhood, community, and sports park classifications. At the City's discretion, this classification may also include the typical park configurations (Neighborhood, Community, or Sports) which have been modified from the original standards, but have the same contiguous shape, size, and design elements, as well as mixed-use parks and greenways.

Greenways: Greenways are comprised of linear parks, trails, and open space. They characteristically reinforce the quality and access of the existing park resources in the neighborhood, sports, and community park categories. Greenways should be employed in a manner that supports continuous and safe alternative non-motorized transportation (i.e., biking, walking, running, and/or equestrian riding as appropriate). They can also include staging areas and the potential for pocket parks where appropriate to create an outdoor economic environment where temporary food kiosks, farmers' markets, or parades can be staged.

City Parks

Brentwood has approximately 207 acres of developed parkland, 61 award winning parks and facilities, and 16 miles of multi-use trails. The City owns approximately 251 acres of parkland, but approximately 44 acres are not yet designed or developed. The City offers over 100 recreational activities and events for people of all ages and interests.

A summary of existing City parks with notable amenities, including locations and acreages, is provided in Table 3.12-3. The table does not include numerous smaller "pocket" parks owned by the City. The location of these parks is shown on Figure 3.12-3.

Table 3.12-3: Existing Park Facilities

Park	Location	Acreage	Facilities
Almanor Park	555 Almanor Street	0.11	Play area, trellis, and turf.
Almond Park	2010 Azalea Way	1.39	Barbeque, basketball court, play area, grass area, five picnic tables and four benches.
Amber Park	2357 DeMartini Lane	0.28	Play area and grass area.
Anastasia Park	1774 Anastasia Drive	0.77	Pocket park features a children's play area, lawn area, and shaded picnic area.
Appaloosa Park	2413 Tamalpais Court	0.71	Play area, a grass area, one picnic table and two benches.
Apple Hill Park	1866 Central Boulevard	4.85	Baseball field, basketball court, barbeques, bike path, children's play area, reservable picnic tables, bocce ball court, and restrooms.
Apricot Park	1875 Spanish Trail	0.25	Grass area and two picnic tables.
Arbor View Park	817 Atherton Boulevard	5.60	Gazebo, large turf area, basketball court, volleyball court, picnic tables, and play equipment for both younger and older children. This park is known for its great variety of trees.
Balfour-Guthrie Park	1701 Balfour Road	6.43	Ballfield, barbeques, basketball courts, a bike path, children's play equipment, a turf area, reservable picnic tables (21), restrooms, overlay soccer field, tennis and volleyball courts.
Berkshire Park	2389 Berkshire Lane	0.40	Picnic tables, turf and a play area for children.
Black Gold Park	2671 St. Regis Avenue	6.22	Bike path, children's play area, picnic tables, and turf
Blue Goose	1765 Adams Lane	4.10	3 barbeques, play area, water features, grass area and 6 reservable picnic tables, and shade area.

Table 3.12-3: Existing Park Facilities			
Park	**Location**	**Acreage**	**Facilities**
Brentwood Family Aquatic Complex	195 Griffith Lane	7.00	Benches, covered area (shaded), hydraulic lift, picnic tables, pool play features, lap pool, restroom(s), shallow entry pool, vending machines, two waterslides, and concession stand.
Brentwood Skate Park	195 Griffith Lane	0.50	Skate & BMX Park features advanced, intermediate and beginner skate elements. The 18,000 sq ft facility includes rails, bowls, rollers, boxes, ledges, and picnic tables. Roller blades, skateboards and BMX bikes are welcome during certain days/times.
Caboose Park	832 Marjoram Drive	1.02	Play area, a grass area, three picnic tables and two benches.
Celeste Park	2955 Celeste Way	1.09	Play area, grass area, two picnic tables and two benches.
Cherry Park	2050 Roper Circle	0.44	Grass area, two picnic tables and two benches.
City Park	710 Second Street	2.50	Barbeques, play area, restrooms, reservable picnic tables, a performance area, a water play feature, and public art.
Cortona Park	366 Cortona Way	0.30	Bike path, play area, grass area, nine picnic tables, benches, and public art.
Creekside Park	1010 Claremont Drive	6.16	Barbeques, basketball court, bike path, play area, large turf area, five picnic tables, lighted tennis courts, ballfield, and portable restroom.
Creekside Trailhead Park	349 Marino Lane	0.40	Bike path and picnic table.
Curtis Park	105 Curtis Drive	0.13	Small children's play area.
Fruitwood Park	1807 Moreau Way	0.42	Grass area and one picnic table.
Garin Park	231 Lawrence Lane	6.36	Large turf area, children's play area, 7 picnic tables, and two soccer fields.
Gemini Park	1149 Europena Drive	0.78	Play area, grass area, two picnic tables and two benches.
Glory Park	4680 Nunn Street	1.10	Basketball court, children's play area, a turf area, and 4 picnic tables.
Granville Green Park	1091 Granville Lane	1.76	Play area, a grass area, four picnic tables, four benches and public art.
Heron Park	950 Garin Parkway	10.81	Enclosed lake surrounded by a bike path and plenty of open grass area. It is equipped with barbeques, play structures, picnic tables, and public art.
Homecoming Park	2040 Homecoming Way	2.00	Barbeques, basketball court, bike path, children's play area, a turf area, three picnic tables, and swings.
Kaleidoscope Park	2581 Margaret Lane	0.54	Play area, one picnic table, one bench, a public art display, and a dinosaur sand box.
King Park	1379 Bauer Way	3.93	Fenced in dog play area, barbecues, basketball court, play area, picnic tables, and public art.

Table 3.12-3: Existing Park Facilities			
Park	**Location**	**Acreage**	**Facilities**
Lake Park	401 Lakeview Drive	1.50	Bike path, children's play area, turf area, and three picnic tables.
Loma Vista Park	1051 Meadowgate Way	4.50	Barbeques, bike path, children's play area, a large turf area, and seven picnic tables.
Mallard Park	668 Ray Street	1.54	Picnic tables, benches, and a water feature.
Marsh Creek Staging Area	Central Boulevard	1.29	Parking lot adjacent to the Marsh Creek Trail.
Marsh Creek Vista Park	48 Pasco Drive	0.47	Turf area and three picnic tables.
McClarren Park	700 McClarren Road	3.18	Play Structure, basketball courts, picnic area, barbecue, and open grass area.
Medallion Park	1108 Europena Drive	0.83	Lawn area and one picnic table.
Miwok Park and Trail	1700 Regal Drive	10.17	Barbeques, bike path, children's play area, a large turf area, and four picnic tables.
Oak Meadow Park	180 Crawford Drive	9.68	Lighted overlay soccer fields, baseball and softball fields, barbeques, bike path, turf areas, play area, and restrooms.
Orchard Park	40 Griffith Lane	5.19	Bike path, children's play area, a large turf area and eight picnic tables.
Palomino Park	2293 Black Stone Drive	0.61	Play area and grass area.
Peach Park	2320 Indian Springs Drive	0.77	Play area, grass area and two picnic tables.
Rainbow's End Park	1626 Marina Way	0.80	Lawn area, public art, and a water feature.
Rolling Hills Park	773 Waterville Drive	2.05	Turf area and three picnic tables.
Rose Garden Park	2732 Cathedral Circle	3.13	Lawn area, gazebo, rose garden, and public art.
Sage Glen Park	60 Rosano Street	2.00	Barbeques, bike path, play area, grass area, picnic tables and benches.
Seedling Park	2180 Wayne Drive	1.41	Grass area, play area, 1 barbeque, 4 picnic tables and 5 benches.
Spirit Park	4600 Ford Street	0.51	Children's play area.
Steeple Chase Park	1082 Steeple Boulevard	1.11	Barbeques, play area, grass area, picnic tables and benches.
Stonehaven Park	1320 Stonehaven Drive	0.15	Play area and turf.
Summerset Commons	1151 Fairview Avenue	13.05	Bicycle paths, benches, and vineyards.
Summerwood Park	1159 San Jose Avenue	4.49	Barbeques, a bike path, children's play area, a large turf area, and eight picnic tables.
Sungold Park	576 Sungold Court	1.71	Barbeques, picnic tables, benches, play area, and turf.
Sunset Park Athletic Complex	655 Sunset Road	39.77	6 field softball/baseball complex, 3 full-size soccer fields and 1 competition soccer field, 2 fully operating

Table 3.12-3: Existing Park Facilities			
Park	**Location**	**Acreage**	**Facilities**
			restrooms and concession stands, viewing bleachers on all softball/baseball and competition soccer field and one soccer field. Playground for children ranging from preschool through elementary school, reservable picnic areas, some with barbecues, are available. A one-mile walking path, equestrian staging area with access to Marsh Creek Trail. Complex is fully lit. Parking for 350 vehicles.
Topaz park	2162 Hilda Way	0.27	Shaded play area.
Veterans Park	3841 Balfour Road	10.50	Located adjacent to the Brentwood Family Aquatics Complex, and the Brentwood Senior Activity Center, this park features covered group picnic areas (reservable), a sand volleyball court, 4 bocce courts with oyster shell surfacing, and horseshoe court. This facility also has a restroom, two children's play areas with unique play equipment (including universal abilities), a 10-foot wide walking path around the perimeter of the park, public art, and veterans monuments.
Walnut Park	4655 Carnegie Lane	5.05	Basketball courts, bike path, children's area, large turf area, and five picnic tables.
Wheatfield Park	2143 Gold Poppy Street	1.34	Play area, grass area and three picnic tables.
Windsor Park	1350 Windsor Way	0.18	Basketball court, children's play area, and one picnic table.
Yokut Park	1840 La Fonte Drive	1.33	Open turf, and features a basketball court, barbecues, two picnic tables, and a children's play area.
Total Park Acreage		**206.93**	

SOURCE: HTTP://WWW.BRENTWOODCA.GOV/DEPARTMENT/PR/COB_PAR/PARKS/PARK_MATRIX.CFM. ACCESSED FEBRUARY 2013.

The City's 2013 population was approximately 53,278. With 251 acres of parkland, the City currently provides 4.71 acres of parkland for every 1,000 people, which is slightly below the City's goal of 5.0 acres for every 1,000 people.

Trails

Trails are a key factor in the development of a city-wide green space network of parks, trails, open space, and recreation facilities. The types of trails owned and maintained by the City are identified below, and the existing City trail system is shown on Figure 3.12-4.

Park Trails: Park trails should be off-road, multi-modal trails fulfilling the following three trail types:

- Type I Park Trails: heavy use multi-modal trails with possible separators for use types.
- Type II Park Trails: lighter use multi-modal trails used often as connectors between parks or open space areas and housing developments.
- Type III Park Trails: hiking trails designed for minimum impact in natural and open space areas, particularly in critical habitat preserves.

Connector Trails: Connector trails provide safe routes to and from neighborhoods and parks. They may also be used as commuter trails when attached to public transportation routes.

- Type I Connector Trails: off-road heavy use multi-modal trails where uses are often separated within the right-of-way. Used to create linkages between park resources, housing developments, and urban areas where park trails would not exist.
- Type II Connector Trails: off-road lighter use trails with non-separated uses, often shorter in length, with connections to housing development or urban and commercial areas from park resources.

Bikeways: Bikeways are routes used in conjunction with or adjacent to roadways. They can be an important component in commuter transportation development. The City maintains three classifications of bikeways, which are structured to conform to Caltrans standards and Federal program funding requirements.

- Class I Bikeway: "Bike paths" provided within a completely separated right-of-way designated for the exclusive use of bicycles and pedestrians with cross flows by motorists minimized. Caltrans standards require bike paths to have a minimum paved width of eight feet and be completely separated from a street.
- Class II Bikeway: "Bike lanes" provided within a restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles with through traffic by motor vehicles or pedestrians prohibited, but with vehicle parking and cross flows by pedestrians and motorists permitted. Caltrans standards require bike lanes to be striped with a 6-inch solid white line that provides a minimum four-foot exclusive bicycle travel lane.
- Class III Bikeway: "Bike routes" provided within the street right-of-way designated by signs or permanent markings and shared with pedestrians or motorists. Caltrans standards require Class III routes to be marked with appropriate bike route signs.

Joint Use Facilities

The City of Brentwood maintains joint use facility agreements with the Brentwood Union School District and the Liberty Union High School District. The agreements allow the school districts to utilize City-owned facilities, and allow the City to utilize school owned facilities.

The agreement between the Brentwood Union School District and the City allow for the joint use of the following District-owned facilities by the City:

- Bristow Middle School Gymnasium/Exercise Room
- J. Douglas Adams Middle School Gymnasium/Exercise Room
- Edna Hill Middle School Gymnasium/Exercise Room/Training Room
- Garin Elementary Multi-Purpose Room*
- Marsh Creek Elementary Multi-Purpose Room*
- Pioneer Elementary Multi-Purpose Room*

*Note: The District will charge the City Group I (non-profit) rate at these locations.

The agreement between the Brentwood Union School District and the City allow for the joint use of the following City-owned facilities by the District:

- Brentwood Community Center
- Brentwood Family Aquatic Complex
- Mobile Stage
- Mobile Bleachers
- Brentwood Library
- Brentwood Senior Activity Center

The agreement between the Liberty Union High School District and the City allow for the joint use of the following District-owned facilities by the City:

- Heritage High School Gymnasium
- Heritage High School Pool
- Heritage High School Athletic Fields
- Heritage High School Sports Stadiums
- Heritage High School Tennis Courts
- Liberty High School Gymnasiums
- Liberty High School Sports Stadium

The agreement between the Liberty Union High School District and the City allow for the joint use of the following City-owned facilities by the District:

- Balfour-Guthrie Park
- Brentwood Family Aquatic Complex
- Oak Meadow Park
- Mobile Stage
- Mobile Bleachers
- Sunset Park Athletic Complex
- Brentwood Community Center
- Brentwood Library
- Brentwood Senior Activity Center

SCHOOLS

The city of Brentwood is served by the Brentwood Union School District (K-5 elementary schools and 6-8 middle schools) and the Liberty Union High School District (9-12 high schools). Table 3.12-4 provides a summary of the public schools serving the city's population.

Table 3.12-4: Public Schools Serving Brentwood

School	Grades Served	Address	Enrollment (2011-2012 School Year)
Elementary Schools			
Brentwood Elementary	K-5	200 Griffith Lane	707
Garin Elementary	K-5	250 First Street	806
Loma Vista Elementary	K-5	2110 San Jose Avenue	641
Marsh Creek Elementary	K-5	601 Grant Street	696
Mary Casey Black Elementary	K-5	480 Farmington Drive	Open for the 2013-2014 school year. Enrollment data not yet available.
Pioneer Elementary	K-5	2010 Shady Willow Lane	917
Ron Nunn Elementary	K-5	1755 Central Boulevard	631
R. Paul Krey Elementary	K-5	190 Crawford Drive	924
Middle Schools			
J. Douglas Adams Middle School	6-8	401 American Avenue	1,030
Edna Hill Middle School	6-8	140 Birch Street	894
William B. Bristow Middle School	6-8	855 Minnesota Avenue	1,084
High Schools			
Freedom High School	9-12	1050 Neroly Road, Oakley, CA	2,536
Heritage High School	9-12	101 American Avenue	2,200
La Paloma High School (Continuation School)	9-12	400 Ghiggeri Drive	229
Liberty High School	9-12	850 Second Street	2,131

SOURCES: CITY OF BRENTWOOD HTTP://WWW.CI.BRENTWOOD.CA.US/LINKS/SCHOOL.CFM (ACCESSED FEBRUARY 2013) AND CALIFORNIA DEPARTMENT OF EDUCATION, EDUCATIONAL DEMOGRAPHICS UNIT, CALIFORNIA PUBLIC SCHOOL ENROLLMENT-SCHOOL REPORT (2011-2012)

OTHER PUBLIC FACILITIES

Brentwood Library

The Brentwood Library is the only public library located in the city of Brentwood. The Brentwood Library is part of the Contra Costa County Library system. This enables the relatively small Brentwood Library to access all of the other libraries that are part of the Contra Costa County Library system to obtain information not found in the Brentwood Library, which has been requested by customers. The Brentwood Library is located at 104 Oak Street across from City Park. The library is open from 10 a.m. to 8 p.m. Monday through Thursday and from 10 a.m. to 6 p.m. on

Fridays and Saturdays. The library collection includes materials in both Spanish and English. It also offers a wide variety of media, including DVDs, CDs and audiobooks, as well as a large print collection. The library offers a number of programs for all ages, including story times for babies and toddlers.

Brentwood Civic Center

The Brentwood Civic Center was constructed in 2011 and houses the City's governmental offices and provides resources and amenities for public use. The project was completed as part of the City's Downtown revitalization efforts. The Civic Center is constructed in a Mission Style architecture, and includes extensive pedestrian connectivity features, public art, historical City information, and parks and recreation facilities.

One feature of the Civic Center is the "History Walk," which was designed to reflect Brentwood's rich history and tell the story of its past. Starting at the center of the Civic Plaza and winding its way throughout the Civic Center arcade, date markers are placed to celebrate significant moments in time that are important to Brentwood's past. The walk encompasses several different components that include historical plaques along the interior walls of the arcade, inscribed concrete walkways, and wall murals.

The Civic Center also includes a wall mural, a fountain covered with a detailed mosaic tile, a children's play area with a decorative fence, a water play feature, picnic tables, benches, a statue, and a rose garden. The park at the Civic Center encompasses approximately 3.86 acres. A 280 stall public parking garage is located adjacent to the center.

The 32,000 square foot Community Center is available for public rental. The first floor has a large banquet room, opening directly on to City Park through a series of large glass doors; a full caterer's kitchen; an arts and crafts room with dedicated storage; a multi-purpose room and a lobby pre-function area with space for art displays and public gatherings. The second floor has a public conference room which can be divided into two rooms.

The buildings were constructed utilizing energy efficient building components, developed to ensure that they are environmentally sound, and earned a Silver Level Leadership in Energy and Environmental Design (LEED) certification. LEED is a nationally recognized energy savings design program.

Brentwood Senior Activity Center

This facility is located at 193 Griffith Lane. It serves as a multi-use facility with a main hall, small stage, dance floor, kitchen, meeting room, and classroom areas. There is a maximum auditorium seating of 300 and a serving seating of 200. The Center features a main hall with a stage, dance floor, kitchen, and large lobby area. It is an ideal space for weddings, luncheons, corporate functions, banquets, trainings, parties, and special events. A meeting/activity room is also available to accommodate smaller functions of up to 88 people. The kitchen includes a gas range/oven, refrigerator, freezer, and ice-maker. Rooms can be rented separately or together to allow extra

flexibility for an event. A variety of additional amenities such as cake tables, skirting, buffet servers, and portable bar are also available. Rental hours are Monday-Friday after 6 pm, and Saturday and Sunday 8 am-1 am.

3.12.2 REGULATORY SETTING

FEDERAL

There are no Federal regulations applicable to the environmental topics of public services and recreation.

STATE AND LOCAL

Fire Protection and Emergency Response

CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

In accordance with California Code of Regulations Title 8 Sections 1270 "Fire Prevention" and 6773 "Fire Protection and Fire Equipment" the California Occupational Safety and Health Administration (Cal/OSHA) has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all fire fighting and emergency medical equipment.

EMERGENCY RESPONSE/EVACUATION PLANS

The State passed legislation authorizing the Office of Emergency Services (OES) to prepare a Standard Emergency Management System (SEMS) program, which sets forth measures by which a jurisdiction should handle emergency disasters. Non-compliance with SEMS could result in the State withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster.

FIRE PROTECTION

The California Fire Code contains regulations relating to construction and maintenance of buildings and the use of premises. Topics addressed in the Code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions to protect and assist first responders, industrial processes, and many other general and specialized fire safety requirements for new existing buildings and premises.

UNIFORM FIRE CODE

The Uniform Fire Code with the State of California Amendments contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the California Fire Code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect

and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The Fire Code contains specialized technical regulations related to fire and life safety.

CALIFORNIA HEALTH AND SAFETY CODE

State fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code. This includes regulations for building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

BRENTWOOD EMERGENCY OPERATIONS PLAN

The purpose of the Brentwood Emergency Operations Plan (EOP) is to provide a blueprint for emergency management within the city. The goal of the plan is to reduce the loss of lives and property in the event of a disaster. The EOP identifies the City's emergency planning, organization, and response policies and procedures. The EOP also addresses the integration and coordination within other governmental agencies that are required during an emergency.

The EOP is based on the functions and principles of the Standardized Emergency Management Systems (SEMS). The EOP addresses how the City will respond to extraordinary events or disasters, from preparation through recovery. A hazards analysis and probability matrix are also included in the EOP. The responsibilities of each department are identified in matrices, and are based on each identified hazard or threat. The development of departmental Standard Operating Procedures (SOPs) is discussed, including what each department will include in their SOPs.

The City's Police Department, specifically the OES Supervisor, is responsible for reviewing the entire plan on an annual basis, and coordinating revisions to the plan as required. Each department manager is responsible for reviewing its SOP on an annual basis and coordinating the revision of the procedures with the Police Department OES Supervisor. Special districts serving the City of Brentwood are responsible for following the plan and developing procedures to fulfill their directed responsibilities, to include an annual review of the entire plan.

The EOP addresses a wide spectrum of contingencies, ranging from relatively minor incidents to large-scale disasters, such as an earthquake. Some emergencies may be preceded by a buildup or warning period, providing sufficient time to warn the public and implement mitigation measures designed to reduce loss of life, property damage, and effects on the environment. Other emergencies may occur with little or no advance warning, thus requiring immediate activation of the EOP and efficient and coordinated mobilization and deployment of resources.

The City's response to disasters is based on five phases:

1. Preparedness;
2. Increased readiness;
3. Initial response operations;
4. Extended response operations; and

5. Recovery operations.

During each phase, specific actions are taken to reduce and/or eliminate the threat of specific disaster situations. In coordination with the City Manager and Incident Commanders, the Emergency Services Coordinator will determine the phase and initiate the appropriate level of alert for response agencies, including the activation of the Emergency Operations Center as required.

MULTI-JURISDICTIONAL LOCAL GOVERNMENT HAZARD MITIGATION PLAN FOR THE SAN FRANCISCO BAY AREA

The Association of Bay Area Governments (ABAG) prepared and adopted a Local Hazards Mitigation Plan in 2005. The purpose of the Plan is to serve as a catalyst for a dialogue on public policies needed to mitigate the natural hazards that affect the San Francisco Bay Area. The overall strategy of the Plan is to utilize a multi-jurisdictional effort to maintain and enhance the disaster resistance of the region, and to fulfill the requirements of the Disaster Mitigation Act of 2000 for all local governments to develop and adopt this type of plan.

Parks and Recreation

QUIMBY ACT

The Quimby Act (California Government Code Section 66477) states that "the legislative body of a city or county may, by ordinance, require the dedication of land or impose a requirement of the payment of fees in lieu thereof, or a combination of both, for park or recreational purposes as a condition to the approval of a tentative or parcel map." Requirements of the Quimby Act apply only to the acquisition of new parkland and do not apply to the physical development of new park facilities or associated operations and maintenance costs. The Quimby Act seeks to preserve open space needed to develop parkland and recreational facilities; however, the actual development of parks and other recreational facilities is subject to discretionary approval and is evaluated on a case-by-case basis with new residential development. The City has adopted park fees as allowed by the Quimby Act, as described in greater detail below.

BRENTWOOD DEVELOPMENT FEE PROGRAM

The City of Brentwood Development Fee Program contains the City's capital improvement facilities fee program to pay for the required infrastructure identified in the City's General Plan. Infrastructure, including parks and recreation facilities, is developed in two major ways. New development builds it as each project is developed, or the City builds it as part of the Capital Improvement Program (CIP). The Development Fee Program evaluates planned capital improvements and associated budget cost estimates, and assigns eligible costs as fees based upon the relative demand imposed by the various types of new development. Parks and trails fees are collected from all new residential development projects in the city, and are assessed on a per-unit basis, as shown in Table II-1 of the Brentwood Development Fee Program.

Schools

CALIFORNIA CODE OF REGULATIONS

The California Code of Regulations, Chapter 4.9, Payment of Fees, Charges, Dedications, or Other Requirements Against a Development Project. *Section 65995-65998 (h)* The payment or satisfaction of a fee, charge, or other requirement levied or imposed pursuant to Section 17620 of the Education Code in the amount specified in Section 65995 and, if applicable, any amounts specified in Section 65995.5 or 65995.7 are hereby deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or reorganization as defined in Section 56021 or 56073, on the provision of adequate school facilities.

CALIFORNIA DEPARTMENT OF EDUCATION

The California Department of Education (CDE) School Facilities Planning Division (SFPD) prepared a School Site Selection and Approval Guide that provides criteria for locating appropriate school sites in the State of California. School site and size recommendations were changed by the CDE in 2000 to reflect various changes in educational conditions, such as lowering of class sizes and use of advanced technology. The expanded use of school buildings and grounds for community and agency joint use and concern for the safety of the students and staff members also influenced the modification of the CDE recommendations.

Specific recommendations for school size are provided in the School Site Analysis and Development Guide. This document suggests a ratio of 1:2 between buildings and land. CDE is aware that in a number of cases, primarily in urban settings, smaller sites cannot accommodate this ratio. In such cases, the SFPD may approve an amount of acreage less than the recommended gross site size and building-to-ground ratio.

Certain health and safety requirements for school site selection are governed by state regulations and the policies of the SFPD relating to:

- Proximity to airports, high-voltage power transmission lines, railroads, and major roadways;
- Presence of toxic and hazardous substances;
- Hazardous facilities and hazardous air emissions within one-quarter mile;
- Proximity to high-pressure natural gas lines, propane storage facilities, gasoline lines, pressurized sewer lines, or high-pressure water pipelines;
- Noise;
- Results of geological studies or soil analyses; and
- Traffic and school bus safety issues.

THE KINDERGARTEN-UNIVERSITY PUBLIC EDUCATION FACILITIES BOND ACT OF 2002 (PROP 47)

This act was approved by California voters in November 2002 and provides for a bond issue of $13.05 billion to fund necessary education facilities to relieve overcrowding and to repair older schools. Funds will be targeted at areas of greatest need and must be spent according to strict accountability measures. Funds will also be used to upgrade and build new classrooms in the California Community Colleges, the California State University, and the University of California in order to provide adequate higher education facilities to accommodate growing student enrollment.

LEROY F. GREENE SCHOOL FACILITIES ACT OF 1998 (SB 50)

The "Leroy F. Greene School Facilities Act of 1998," also known as Senate Bill 50 or SB 50 (Chapter 407, Statutes of 1998), governs a school district's authority to levy school impact fees. This comprehensive legislation, together with the $9.2 billion education bond act approved by the voters in November 1998 known as "Proposition 1A", reformed methods of school construction financing in California. SB 50 instituted a new school facility program by which school districts can apply for state construction and modernization funds. It imposed limitations on the power of cities and counties to require mitigation of school facilities impacts as a condition of approving new development and provided the authority for school districts to levy fees at three different levels:

- Level I fees are the current statutory fees allowed under Education Code 17620. This code section provides the basic authority for school districts to levy a fee against residential and commercial construction for the purpose of funding school construction or reconstruction of facilities. These fees vary by district for residential construction and commercial construction and are increased biannually.

- Level II fees are outlined in Government Code Section 65995.5, allowing school districts to impose a higher fee on residential construction if certain conditions are met. These conditions include having a substantial percentage of students on multi-track year-round scheduling, having an assumed debt equal to 15–30 percent of the district's bonding capacity (percentage is based on revenue sources for repayment), having at least 20 percent of the district's teaching stations housed in relocatable classrooms, and having placed a local bond on the ballot in the past four years which received at least 50 percent plus one of the votes cast. A Facility Needs Assessment must demonstrate the need for new school facilities for unhoused pupils is attributable to projected enrollment growth from the construction of new residential units over the next five years.

- Level III fees are outlined in Government Code Section 655995.7. If State funding becomes unavailable, this code section authorizes a school district that has been approved to collect Level II fees to collect a higher fee on residential construction. This fee is equal to twice the amount of Level II fees. However, if a district eventually receives State funding, this excess fee may be reimbursed to the developers or subtracted from the amount of state funding.

3.12.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on public services if it would result in:

- Substantial adverse physical impacts associated with the provisions of new or physically altered government facilities, and/or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:
    - Fire Protection;
    - Police Protection;
    - Schools;
    - Parks; and
    - Other public facilities.
- An increase in 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; or
- If it includes recreational facilities or requires the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

IMPACTS AND MITIGATION MEASURES

Impact 3.12-1: General Plan implementation could result in adverse physical impacts on the environment associated with governmental facilities and the provision of public services (Less than Significant)

Development accommodated under the General Plan would result in additional residents and businesses in the city, including new residential, industrial, office, and commercial uses. As described in Chapter 2.0, the General Plan is expected to accommodate up to 9,972 new residential dwelling units and up to 9,896,951 square feet of non-residential building space within the city limits at full buildout.

This new growth within the city limits would increase the city's population by approximately 27,639 residents. The full development of the new non-residential uses shown in Table 2.0-2 would increase the employment opportunities in Brentwood by approximately 21,232 jobs.

As shown in Table 2.0-2, buildout of the General Plan within the Planning Area could yield an additional 3,642 new residential units and 2,994,116 square feet of new non-residential building space within the Planning Area.

This new growth would increase the Planning Area's population by approximately 11,419 residents. The full development of the new non-residential uses shown in Table 2.0-2 would increase the employment opportunities in Planning Area by approximately 6,276 jobs.

Development and growth facilitated by the Brentwood General Plan would result in increased demand for public services, including fire protection, law enforcement, schools, parks, libraries, and other public and governmental services. The General Plan includes policies and actions to ensure that public services are provided at acceptable levels and to ensure that development and growth does not outpace the provision of public services.

As the demand for services increases, there will likely be a need to address acceptable service ratios, response times, and other performance standards. New or expanded service structures (e.g., offices, maintenance and administrative buildings, schools, parks, fire facilities, libraries, etc.) will be needed to provide for adequate staffing, equipment, and appropriate facilities to serve growth in the city.

Existing facilities may be expanded at their current location. New facilities may also be constructed. The Public Facility (PF) and Park (P) land use designations would accommodate the majority of new public facilities necessary to provide community services. There would likely be environmental impacts associated with the construction or expansion of the facilities needed to provide public services.

As future development and infrastructure projects (including new governmental facilities) are considered by the City, each project will be evaluated for conformance with the General Plan, Municipal Code, and other applicable regulations. Subsequent development and infrastructure projects would also be analyzed for potential environmental impacts, consistent with the requirements of CEQA.

The Brentwood General Plan includes a range of policies and actions (listed below) to ensure that public services are provided in a timely fashion, are adequately funded, are coordinated between the City and appropriate service agency, and that new development funds its fair share of services. The General Plan includes policies to ensure that fire protection and law enforcement services keep pace with new development and that school, library, and governmental services are adequately planned and provided. The General Plan also includes an action to maintain a Capital Improvement Program to defray the cost of developing public facilities.

As previously stated, new facilities will be needed to serve growth allowed under the General Plan. The environmental effect of providing the public services is associated with the physical impacts of providing new and expanded facilities. The specific impacts of providing new and expanded facilities cannot be determined at this time, as the General Plan does not propose development nor does it designate specific sites for new or expanded public facilities. However, the facilities would be primarily provided on sites with land use designations that allow such uses and the environmental impacts of constructing and operating the governmental facilities would likely be similar to those associated with new development, redevelopment, and infrastructure projects

under the General Plan. These impacts are described in the relevant chapters (Chapters 3.1 through 3.14, and 4.0) of this Draft EIR.

This Draft EIR addresses the potential impacts of development that may occur under the General Plan, including residential, commercial, office, industrial, public facilities, and a range of other uses. Where potentially significant or significant impacts are identified, this EIR identifies mitigation measures to reduce the impact and discloses which impacts cannot be reduced to a less than significant impact. There are no additional environmental impacts, apart from those disclosed in the relevant chapters of this EIR, that are anticipated to occur. Therefore, this impact is considered **less than significant** and no additional mitigation is necessary.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy CSF 1-1: Ensure that new growth and development participates in the provision and expansion of community services and facilities, and does not exceed the City's ability to provide them.

Policy CSF 1-2: Require new development to demonstrate that the City's community services and facilities can accommodate the increased demand for said services and facilities associated with the project.

Policy CSF 1-3: Require new development to offset or mitigate impacts to community services and facilities to ensure that service levels for existing users are not degraded or impaired by new development, to the satisfaction of the City.

Policy CSF 3-1: Ensure that the Police Department has adequate funding, staff, and equipment to accommodate existing and future growth in Brentwood.

Policy CSF 3-2: The City shall strive to maintain a police force level of 1.5 to 2.5 officers per 1,000 population.

Policy CSF 3-3: Promote and support community-based crime prevention programs, as an important augmentation to the provision of professional police services.

Policy CSF 3-4: Emphasize the use of physical site planning as an effective means of preventing crime. Open spaces, landscaping, parking lots, parks, play areas, and other public spaces should be designed with maximum feasible visual and aural exposure to community residents.

Policy CSF 3-5: Promote coordination between land use planning and urban design through consultation and coordination with the Police Department during the review of new development applications.

Policy CSF 4-1: Encourage and support the East Contra Costa Fire Protection District and providers of emergency medical services to maintain adequate staff and equipment to provide high quality and responsive fire protection and emergency medical services to existing and future growth in Brentwood.

Policy CSF 4-2: Encourage, and work cooperatively with, the East Contra Costa Fire Protection District and providers of emergency medical services to maintain a three to five minute response time for all emergency response calls within Brentwood.

Policy CSF 4-3: Support efforts to improve fire protection and emergency medical services through organizational changes, if such changes would result in a significant improvement in fire protection and emergency medical services provided to Brentwood.

Policy CSF 4-4: Design and maintain roadways in such a way so as to maintain acceptable emergency vehicle response times.

Policy CSF 4-5: Ensure that new development is designed, constructed, and equipped consistent with the requirements of the California Fire Code in order to minimize the risk of fire.

Policy CSF 4-6: Ensure that new development is served with adequate water volumes and water pressure for fire protection.

Policy CSF 5-4: Support the provision of high quality civic, library, medical, and other community facilities in order to meet the broad range of needs within Brentwood.

Policy CSF 5-5: Support efforts by Contra Costa County to provide library services that meet the evolving educational and social needs of Brentwood residents.

Policy CSF 5-6: Provide an environment in which community literacy and cultural opportunities are enhanced.

Policy CSF 5-7: Pursue additional funding sources for library operations that serve Brentwood.

Policy CSF 5-8: Explore opportunities to expand library services and funding to areas within Brentwood.

Policy FI 1-6: Require that revenues generated by development be sufficient to cover the costs incurred by the City to provide infrastructure and public services to such development.

Policy LU 4-3: Provide new opportunities for community gathering and social interaction through park facilities, community centers, and cultural/art facilities.

ACTIONS

Action CSF 1a: Require new development to pay its fair share of the cost of on and off-site community services and facilities.

Action CSF 3a: Continue to require preparation of an annual Police Department Annual Performance Report, as amended periodically.

Action CSF 3b: In conjunction with the annual Police Department Annual Performance Report, further develop and refine best practices to assess, monitor, and maintain the Police Department's organizational performance goals and monitor police staffing levels. The assessment categories related to adequate police staffing could include but are not limited to:

1. *Crime rates*
2. *Response times*
3. *Clearance rates*
4. *Population*
5. *Police department workload*
6. *Financial resources*
7. *Performance standards*

Action CSF 3c: As part of the development review process, consult with the Police Department in order to ensure that the project design facilitates adequate police staffing and that the project addresses its impacts on police services.

Action CSF 3d: Continue to implement community-based police outreach services and programs, including but not limited to, neighborhood watch, volunteers in police service (VIPS), and crime and safety needs of seniors (TRIAD).

Action CSF 4a: Continue to enforce the California Building Code and the California Fire Code to ensure that all construction implements fire-safe techniques, including fire resistant materials, where required.

Action CSF 4b: As part of the City's existing development review process for new projects, the City will continue to refer applications to the East Contra Costa Fire Protection District for determination of the project's potential impacts on fire protection services. Requirements will be added as conditions of project approval, if appropriate.

Action CSF 4c: If the community experiences a decrease or decline in fire protection service levels, the City should establish a formal fire study program to review opportunities to improve fire protection services within Brentwood. If established, the fire study program should include, but not be limited to, the following:

1. *A public outreach process and educational program to assist in the development of the fire study program;*
2. *Public input on local fire protection services, funding, and alternatives;*
3. *Identification of fire response times, service levels, and standards for the proximity of fire stations to urban development that are necessary to provide the City's desired level of fire protection;*
4. *Opportunities for new and/or additional funding sources for fire protection services;*
5. *Opportunities for an increased City role in the provision of fire protection services;*
6. *A range of options and alternatives to improve fire protection services in Brentwood; and*

7. *Analysis of the financial and logistical feasibility of the establishment of a City fire department or a joint powers authority, if deemed appropriate, consisting of the City and neighboring jurisdictions.*

Action CSF 5c: Identify partnership opportunities between municipalities, other agencies, and library support organizations to expand library facilities, resources, and/or services.

Action CSF 5d: Pursue joint-use agreements with schools, social service agencies, cultural institutions, and other community organizations to extend library and other public services to populations that may otherwise not be served.

Action FI 1a: Annually review and adjust user fees to ensure that they reflect the full cost (or the percentage of full cost as approved by the City Council) of providing services.

Action FI 1b: Require development projects to prepare a fiscal analysis of potential effects on the City's revenue generation and cost of services, when the City Treasurer determines there is potential for significant negative fiscal impacts, and condition project approval upon establishment of revenue enhancement mechanisms if necessary to prevent adverse fiscal impacts.

Impact 3.12-2: General Plan implementation may result in adverse physical impacts associated with the deterioration of existing parks and recreation facilities or the construction of new parks and recreation facilities (Less than Significant)

Growth accommodated under the General Plan would include a range of uses that would increase the population of the city and also attract additional workers and tourists to the city. This growth would result in increased demand for parks and recreation facilities. It is anticipated that over the life of the General Plan, use of regional parks, trails, and recreation facilities would increase, due to new residents as well as tourists visiting the city. Use of neighborhood parks would also increase, but the level of increase would be less pronounced since new residential subdivisions and residential projects would be required to provide adequate parks and open space and/or in-lieu fees to ensure that adequate parks and recreation facilities are provided to serve the development, as required by Policies CSF 2-4 and CSF 2-8. The additional demand on existing parks and recreational facilities, particularly regional facilities, would increase the need for maintenance and improvements. These improvements could have environmental impacts, although the exact impacts cannot be determined since the potential improvements are unknown.

The provision of new parks and recreation facilities would reduce the potential for adverse impacts and physical deterioration of existing parks and recreation facilities, by providing additional facilities to accommodate the demand for parks and recreation facilities. These new facilities would be provided at a pace and in locations appropriate to serve new development, as required by Policies LU 4-2, CSF 2-1, and CSF 2-7.

Development under the General Plan would indirectly lead to the construction of new parks and recreation facilities to serve new growth and to meet existing parks and recreation needs. The General Plan supports the creation of new parks and recreation facilities, including new trails, to accommodate a wide range of activities for all age groups. These new parks and recreation facilities would be spread throughout areas proximate to new development in and around existing neighborhoods. Neighborhood and community parks can be accommodated in the Park (P) land use designation, as well as all residential and commercial land use designations.

Policy CSF 2-2 establishes a citywide ratio of five acres of parkland per 1,000 residents. As shown in Table 3.12-3, there are currently 207 acres of developed parkland in Brentwood, and the City owns an additional 44 acres of undeveloped parkland. As shown in Table 2.0-3, the projected buildout population within the city limits (which includes existing plus projected population growth) is 80,917. At a ratio of five acres of parkland per 1,000 residents, buildout of the General Plan within the city limits would result in a demand for 404.6 acres of developed parkland, or 197.6 acres of developed parkland in addition to the existing stock of 207 developed acres. Within the entire Planning Area, the projected buildout population (which includes existing growth, buildout of the city limits, and buildout of the Planning Area) is 92,336. This would create the demand for 461.7 acres of parkland, or 254.7 additional acres of developed parkland.

As future parks and recreation projects are considered by the City, each project will be evaluated for conformance with the General Plan, Municipal Code, and other applicable regulations. Parks and recreation projects would also be analyzed for potential environmental impacts, consistent with the requirements of CEQA.

In addition to ensuring that new and expanded parks and recreation facilities are provided to accommodate new growth, the General Plan includes policies and actions to ensure that parks and recreation facilities are adequately maintained and improved to serve both existing and planned growth, as required by Policies CSF 2-7 and CSF 2-9, and Actions CSF 2a, CSF 2b, and CSF 2c. Improvements at existing parks and recreation facilities may include regular maintenance and a range of improvements, such as new signage, new and/or expanded trails systems, new and/or expanded restrooms, picnic facilities, sports fields, and play structures, to ensure that new facilities are provided to serve new growth and existing facilities continue to meet the needs of the community. These improvements to existing facilities would likely have environmental impacts similar to those associated with new development under the General Plan. This Draft EIR addresses the potential impacts of new development across the range of environmental topics under CEQA, and identifies mitigation measures where appropriate, to ensure that environmental impacts associated with new construction and development under the General Plan are reduced to the greatest extent feasible.

The General Plan establishes the policies and actions to ensure that existing parks and recreation facilities are improved and maintained, by providing for a range of improvements appropriate to serve growth and ensure on-going improvement and maintenance of existing facilities, and includes provisions to ensure that adequate parks and recreational facilities are provided at a pace

adequate to serve new population growth. The applicable General Plan policies and actions are listed below.

This Draft EIR addresses the potential impacts of development that may occur under the General Plan, including residential, commercial, public facilities, recreation facilities, and a range of other uses. Where potentially significant or significant impacts are identified, this Draft EIR identifies mitigation measures to reduce the impact and discloses which impacts cannot be reduced to a less than significant level. There are no additional significant adverse environmental impacts, apart from those disclosed in the relevant chapters of this Draft EIR, that are anticipated to occur associated with existing or new parks and recreation facilities. Therefore, this impact is considered **less than significant** and no mitigation is necessary.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy CSF 2-1: Ensure the provision of sufficient land that is well distributed and interconnected throughout the community for parks, trails, and recreation facilities.

Policy CSF 2-2: Achieve and maintain a minimum overall citywide ratio of 5 acres of park land per 1,000 residents.

Policy CSF 2-3: Park acreage should be provided in accordance with the following standards:

Neighborhood Park: 3.0 acres per 1,000 residents

Community Park: 2.0 acres per 1,000 residents

Policy CSF 2-4: Develop new parks, trails, and recreation facilities through developer fees in areas which are accessible and convenient to the community, prioritizing areas that are lacking these facilities.

Policy CSF 2-5: Develop and maintain a system of parks, trails, and recreation facilities to create diverse opportunities for passive and organized recreation.

Policy CSF 2-6: Uphold design, construction, implementation, and maintenance standards to ensure high quality parks, trails, and recreation facilities, programs, and services, now and into the future.

Policy CSF 2-7: Expand, renovate, and maintain high quality parks, trails, and recreation facilities, programs, and services to accommodate existing and future needs that address traditional and non-traditional recreation, active and passive recreation, wellness, historical, cultural arts, environmental education, conservation, accessibility, inclusion, diversity, safety, and new technology.

Policy CSF 2-8: Consider the effects of new development on parks, trails, and recreation facilities, programs, and services, and condition new development appropriately to ensure that the City maintains an adequate inventory and network of facilities and resources.

Policy CSF 2-9: Continue to collect development impact fees in order to fund the acquisition of parkland, construction of new facilities and resources, and maintenance of City parks, trails, and recreation facilities. The City shall ensure that park facility impact fees are collected for new development that increases demand for parks, trails, and recreation facilities.

Policy CSF 2-10: Actively promote and participate in regional coordination and planning efforts to provide quality parks, trails, and recreation facilities throughout Brentwood and the surrounding areas. The City should emphasize regional coordination to leverage funding, maintenance, and/or resources to develop a diverse range of regional recreational opportunities.

Policy CSF 2-11: Encourage the provision and dedication of parkland within future development projects in order to ensure that the City maintains an extensive network of neighborhood parks that serve all areas of the community.

Policy CSF 2-12: Through conditions of approval and/or development agreements, ensure that the development of new parks, trails, and recreation facilities occurs during the infrastructure construction phase of new development projects so that they are open and available to the public prior to completion of the project.

Policy CSF 2-13: Promote the development of a diverse network of parks, trails, and recreation facilities that support traditional and non-traditional recreational uses.

Policy CSF 2-14: Emphasize and prioritize public outreach and educational programs that inform the community of available parks, trails, and recreation facilities, programs, and services available in order to increase and enhance community use of these facilities, programs, and services.

Policy CSF 2-15: Continue the City's current practice of holding public meetings and workshops for community participation and input with respect to the design of new (and/or the renovation of existing) parks, trails, and recreation facilities.

Policy CSF 2-16: Encourage community and volunteer efforts to assist in the maintenance and beautification of parks, trails, and recreation facilities in Brentwood.

Policy CSF 2-17: Encourage and maintain diverse public access to parks, trails, and recreation facilities to the greatest extent feasible.

Policy CSF 2-18: Support recreational activities, events, organized sports leagues, and other programs that serve broad segments of the community.

Policy CSF 2-19: Allow parks as a permitted use in all residential land use designations.

Policy COS 1-4: Where possible, integrate open space and stream corridors with trails and other recreational open space in an environmentally sustainable manner.

Policy ED 6-2: Provide high quality public amenities, including parks, community facilities, and other public infrastructure.

Policy LU 4-2: Require development projects to provide adequate and appropriately located land, easements, or other accommodation for recreational uses, including neighborhood parks, existing and planned trails, and connections to existing or planned trails and other recreational resources as set forth in the Conservation and Open Space Element, the Community Services and Facilities Element, and the Circulation Element.

Policy LU 4-3: Provide new opportunities for community gathering and social interaction through park facilities, community centers, and cultural/art facilities.

Policy LU 4-4: Site new park and recreation facilities where they will be accessible by the City's pedestrian and bicycle network and in close proximity to medium and higher density residential uses, where appropriate.

ACTIONS

Action CSF 2a: Continuously monitor the condition of parks, trails, and recreation facilities throughout the community and prioritize the rehabilitation of existing facilities that serve the greatest number of residents.

Action CSF 2b: Prepare and maintain a parks, trails, and recreation facilities development and funding schedule based on periodic assessments of community needs and the condition of existing facilities.

Action CSF 2c: Investigate and pursue a diverse range of funding opportunities for parks, trails, and recreation facilities, including but not limited to, grants, joint use/management strategies, user fees, private sector funding, assessment districts, homeowners' associations, non-profit organizations, funding mechanisms for the maintenance of older parks, and management assistance through Federal, State, and regional partnerships.

Action CSF 2d: Develop and maintain a comprehensive Parks and Landscape Standard Plans and Specifications document for parks, trails, and recreation facilities. The Parks and Landscape Standard Plans and Specifications document should address, at a minimum, the following:

1. *Facility size and service area;*
2. *Location;*
3. *Site characteristics;*
4. *Basic design elements;*
5. *Optional design elements;*

6. *Accessibility standards;*

7. *Utility and infrastructure requirements; and*

8. *Maintenance requirements.*

Development standards shall be included for all types of parks, trails, and recreation facilities, including neighborhood parks, community parks, sports parks, special use parks, trails, natural open space, and detention basins managed by the City.

Action CSF 2e: Conduct periodic assessments of the City's parks, trails, and recreation facilities and provide periodic reports to the City Council. The reports should include an assessment of the condition of existing facilities, a summary of future and pending facility development, recent accomplishments, and a summary of future goals and priorities.

Action CSF 2f: Periodically review, and if necessary update, the City's Parks and Recreation Development Impact Fees in order to ensure that new development continues to provide a fair-share contribution towards parks, trails, and recreation facilities.

Action CSF 2g: Continuously monitor the rate of development and population growth in Brentwood in order to ensure that the City maintains a minimum overall ratio of 5 acres of parkland for every 1,000 residents.

Action CSF 2h: Implement a wide range of public outreach programs, including the City's website, newsletters, and other emerging communications technologies to keep the public informed about available parks, trails, and recreation facilities, programs, and services.

Action CSF 2i: Conduct periodic public surveys to ascertain the parks, trails, and recreation needs of the community.

Action CSF 2j: Prioritize the acquisition and development of a large area of land for a regional type multi-purpose park/recreational facility in Brentwood. The land and facility should accommodate development of a large-scale community park and provide opportunities to attract regional events (i.e., rodeos, carnivals, festivals, etc.).

Action CSF 2k: Continue to pursue joint-use of schools and detention facilities to supplement the parks, trails, and recreation needs of the community.

Impact 3.12-3: General Plan implementation may increase demand for schools and result in the need to construct new schools (Less than Significant)

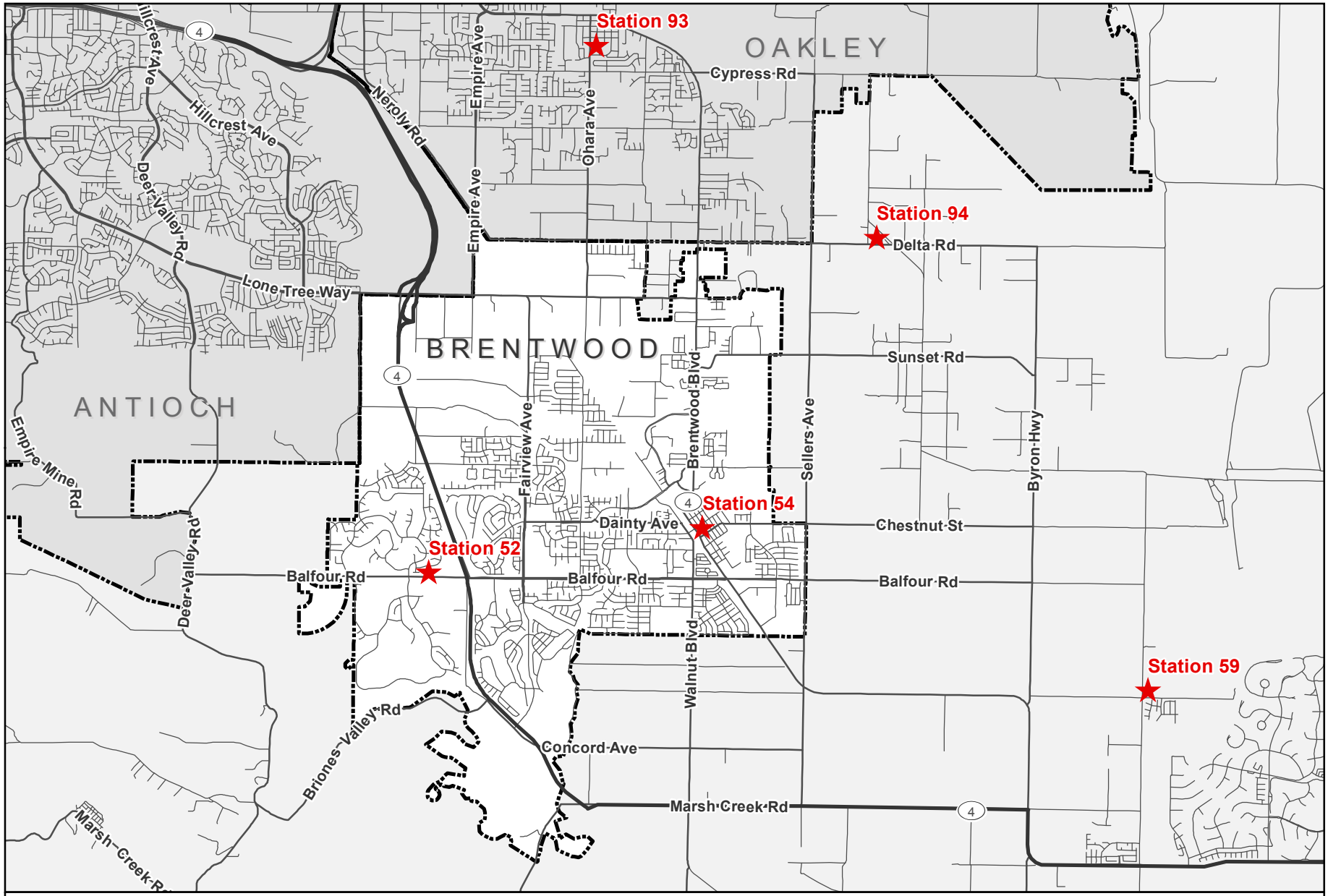
Implementation of the General Plan would indirectly lead to new population growth within the city limits and Planning Area, which would increase the demand for schools and school facilities. The city of Brentwood is served by the Brentwood Union School District (K-5 elementary schools and 6-8 middle schools) and the Liberty Union High School District (9-12 high schools).

The General Plan includes Policy CSF 5-1, which requires the City to work cooperatively with the local school districts in order to ensure that adequate facilities are provided in a timely manner in accordance with the pace of residential development. Policy CSF 5-2 articulates the City's strong support of high quality schools and educational opportunities in Brentwood. Action CSF 5a requires the City to coordinate with the school districts to ensure the adequate provision of schools and related facilities to serve existing and future development in Brentwood, and support the establishment of a School Facility Master Plan.

In order to further assist the local school districts in the acquisition of suitable sites for future facilities, the General Plan includes Policy LU 1-10, which states that schools are an allowed land use within all residential, commercial, office, and business park designations. This policy ensures that there are ample sites throughout all areas of the city and Planning Area which are suitable for the construction of future schools to meet demands associated with buildout of the General Plan.

The Brentwood Union School District and the Liberty Union School District collect developer fees in order to assist in funding facility needs at their sites, and to acquire and develop new school sites to meet increased demand for schools and school facilities. Action CSF 5b requires new development to pay applicable school facility impact fees and work with the school districts to ensure that adequate schools and related facilities will be available. Additionally, in accordance with Section 65995(h) of the California Government Code, the payment of statutory fees "…is deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or reorganization as defined in Section 56021 or 56073, on the provision of adequate school facilities."

This Draft EIR addresses the potential impacts of development that may occur under the General Plan, including residential, commercial, public facilities, recreation facilities, schools, and a range of other uses. Where potentially significant or significant impacts are identified, this Draft EIR identifies mitigation measures to reduce the impact and discloses which impacts cannot be reduced to a less than significant level. There are no additional significant adverse environmental impacts, apart from those disclosed in the relevant chapters of this Draft EIR, that are anticipated to occur associated with existing or new schools or related school facilities. For these reasons, implementation of the General Plan would have a **less than significant** impact related to school facilities.



CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.12-1: ECCFPD Fire Station Locations

Data sources: City of Brentwood GIS, Contra Costa County GIS, ESRI StreetMap North America. Map date: February 11, 2013. Updated March 5, 2014.

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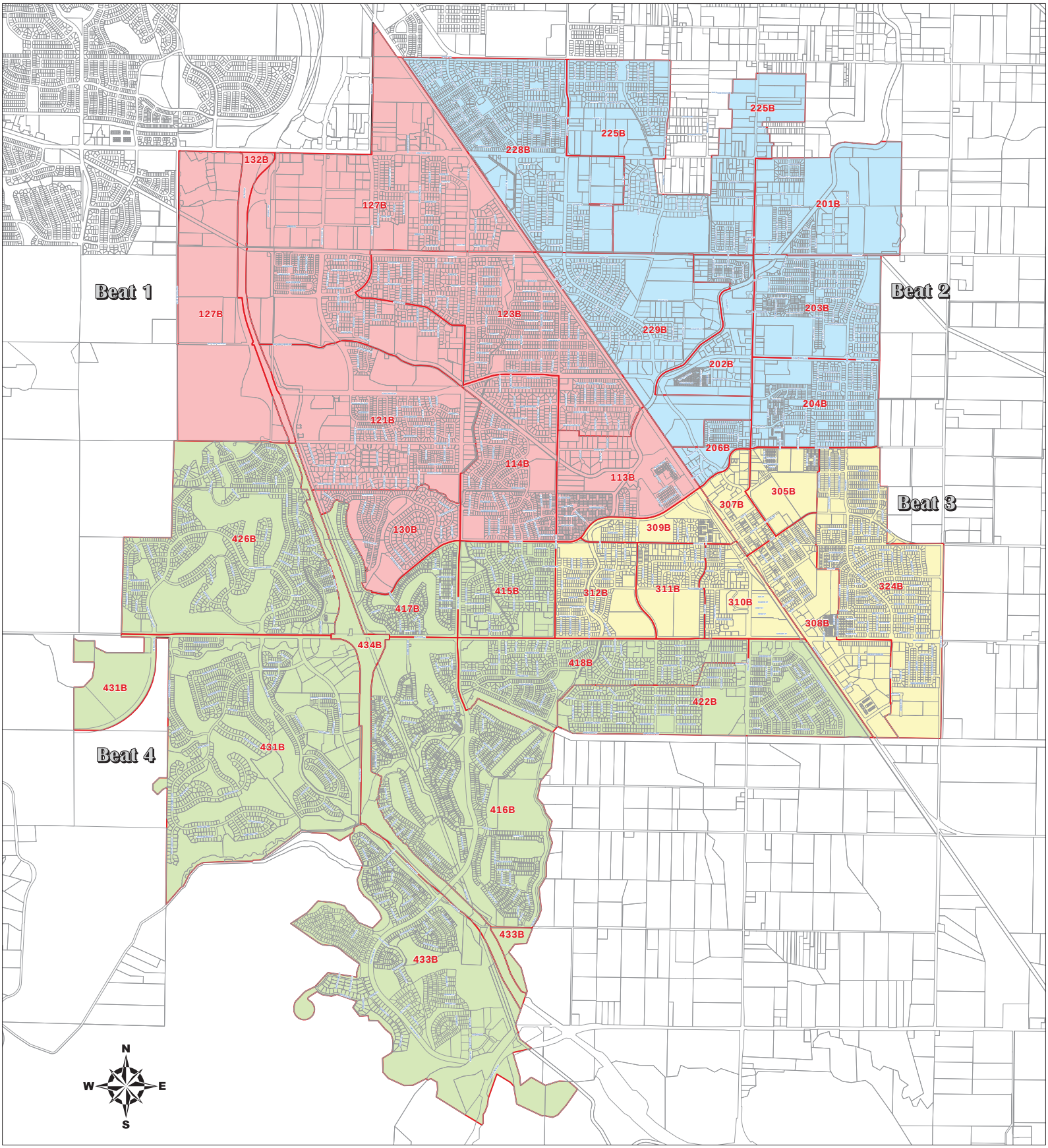

Beat 1
Beat 2
Beat 3
Beat 4

Data source: City of Brentwood. Map date: February 11, 2013.

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 3.12-2: Brentwood Police Department Beat and Reporting Districts

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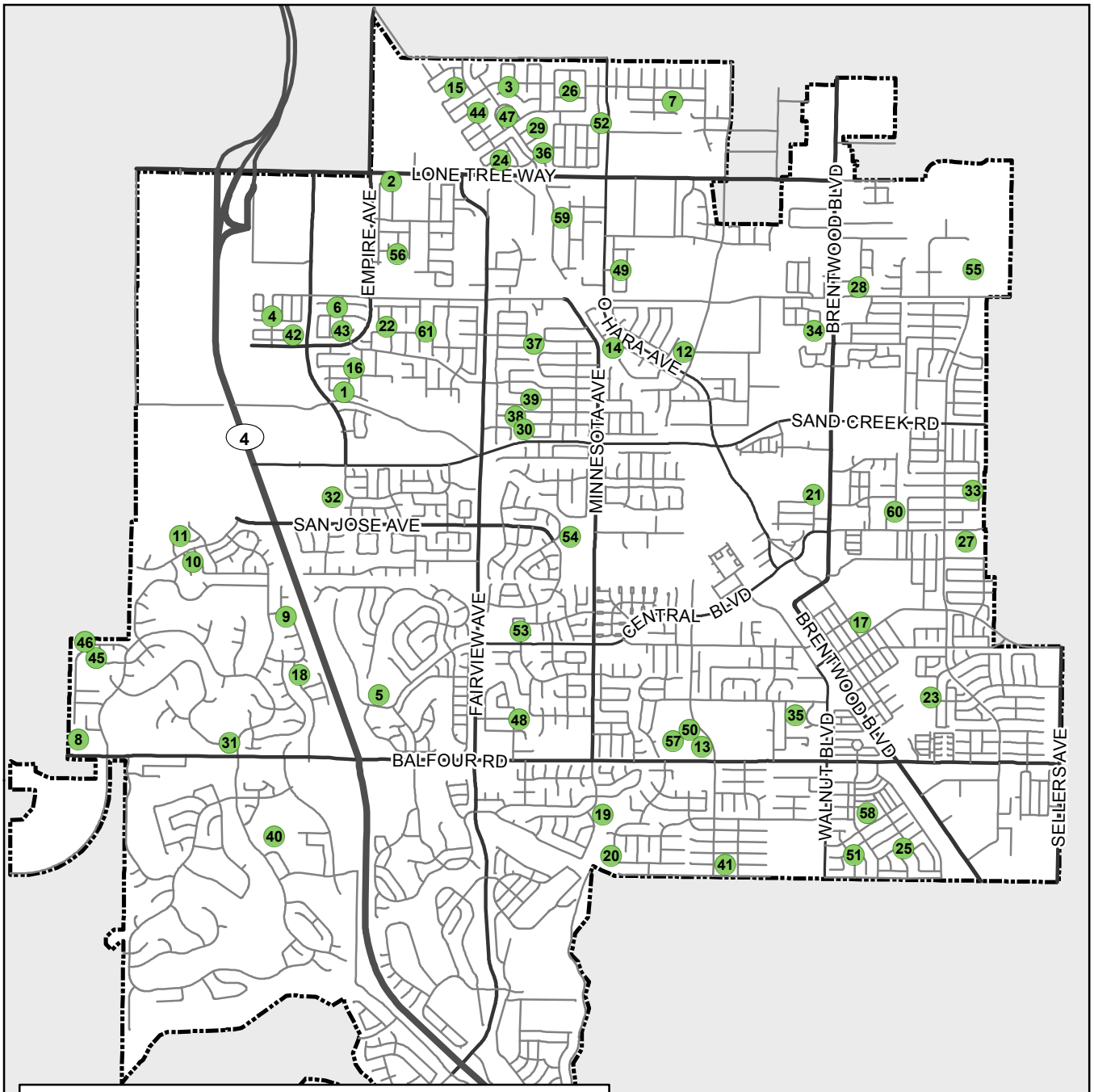

Map ID	PARK	Map ID	Park	Map ID	PARK
1	Almond Park	22	Fruitwood Park	42	Palomino Park
2	Amber Park	23	Garin Park	43	Peach Park
3	Anastasia Park	24	Gemini Park	44	Rainbows End Park
4	Appaloosa Park	25	Glory Park	45	Rolling Hills Park
5	Apple Hill Park	26	Granville Green Park	46	Rolling Hills Park
6	Apricot Park	27	Heron Park	47	Rose Garden Park
7	Arbor View Park	28	Homecoming Park	48	Sage Glen Park
8	Balfour-Guthrie Park	29	Kaleidoscope Park	49	Seedling Park
9	Berkshire Park	30	King Park	50	Skateboard Park
10	Black Gold Park	31	Lake Park	51	Spirit Park
11	Black Gold Park	32	Loma Vista Park	52	Steeplechase Park
12	Blue Goose Park	33	Mallard Park	53	Stonehaven Park
13	Brentwood Family Aquatic Park	34	Marsh Creek Vista Park	54	Summerwood Park
14	Caboose Park	35	McClarren Park	55	Sunset Park Athletic Complex
15	Celeste Park	36	Medallion Park	56	Topaz Park
16	Cherry Park	37	Miwok Park	57	Veterans Park
17	City Park	38	Miwok Park/Trail	58	Walnut Park
18	Cortona Park	39	Miwok Trail	59	Wheatfield Park
19	Creekside Park	40	Oak Medow Park	60	Windsor Way Park
20	Creekside Trail Head Park	41	Orchard Park	61	Yukot Park
21	Curtis Park				

Data sources: City of Brentwood GIS. Map date: February 27, 2013.

BRENTWOOD GENERAL PLAN UPDATE

Figure 3.12-3: Citywide Parks Map

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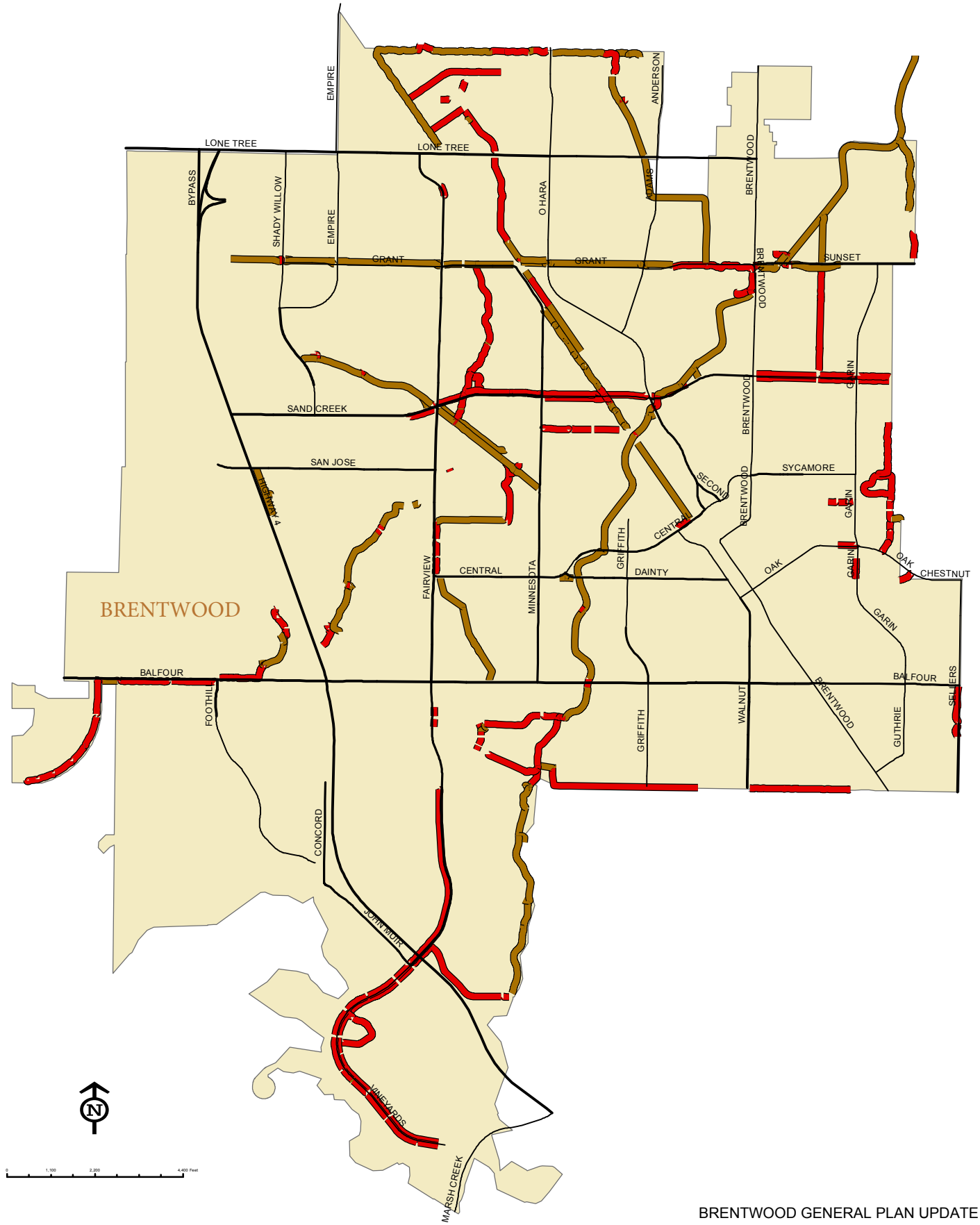

Park Trail Surface

Asphalt

Concrete

BRENTWOOD GENERAL PLAN UPDATE

Figure 3.12-4: Citywide Trail Locations

De Novo Planning Group

A Land Use Planning, Design, and Environmental Firm

Source: City of Brentwood Parks & Recreation Department, 2011

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This chapter describes the potential impacts to the transportation system associated with adoption and implementation of the General Plan. The impact analysis examines the roadway, transit, bicycle, and pedestrian components of the city's transportation system. To provide a context for the impact analysis, this chapter begins with the environmental setting, which is a description of the existing physical and operational conditions for the transportation system. Following the setting is the regulatory framework influencing the transportation system and providing the basis for impact significance thresholds used in the impact analysis. The chapter concludes with the impact analysis findings and recommended mitigation measures. This section was prepared by Whitlock & Weinberger Transportation (W-Trans).

3.13.1 TRANSPORTATION SETTING

The existing physical and operational conditions for Brentwood's transportation system are based on review of local and regional transportation plans, as well as physical review of the existing transportation system, as described below. Descriptions are organized by transportation system component beginning with roadways and intersections, and followed by the pedestrian and bicycle network, transit system, and truck routes.

EXISTING CIRCULATION NETWORK

The city of Brentwood lies on the outskirts of the East Bay within Contra Costa county. To the west, State Route (SR) 4 connects Brentwood to Concord and Walnut Creek by approximately 25 and 30 mile drives, respectively. To the northwest, SR 160 connects Brentwood to the Sacramento area, and to the south, Vasco Road connects Brentwood to Livermore and the Tri-Valley region. SR 4 extends eastward from Brentwood connecting to Stockton and the Interstate 5 (I-5) corridor through the Central Valley.

Originally, SR 4 within Brentwood extended south along Brentwood Boulevard through Downtown on what historically has been the City's "main street." To alleviate congestion, a bypass to the highway has been established, and Caltrans has re-designated SR 4 to the new bypass alignment. At the time data collection was initiated for the General Plan Update circulation analysis, SR 4 consisted of a grade-separated freeway between Antioch and Lone Tree Way, and an at-grade two-lane expressway extending southward to Vasco Road. Since that time, a new grade-separated interchange at Sand Creek Road has been completed. To the west through the communities of Antioch and Pittsburg, SR 4 has also been expanded to further alleviate regional congestion.

Roadway System

This section describes the physical characteristics of Brentwood's primary roadway network.

ROUTES OF REGIONAL SIGNIFICANCE

The Contra Costa Transportation Authority (CCTA) has designated a regional system of streets that has been determined critical to regional transportation in Contra Costa county and connectivity to neighboring counties. These Routes of Regional Significance include the one highway operated and maintained by Caltrans that passes through Brentwood, as well as other routes that connect to adjacent communities. The following corridors in and surrounding Brentwood have been identified by CCTA as Routes of Regional Significance, and are shown on Figure 3.13-1.

- State Route 4
- Balfour Road
- Brentwood Boulevard
- Deer Valley Road
- Fairview Avenue
- Lone Tree Way
- Oak Street-Walnut Boulevard
- Marsh Creek Road
- Vasco Road
- Sand Creek Road (proposed designation in future)

State Route 4 opened in Brentwood in 2008 and replaces a previous route alignment that extended along city streets through Downtown. Currently, the northern section of this route consists of a grade-separated freeway, converting to an at-grade highway south of Sand Creek Road. To the north of Brentwood, SR 4 provides regional connectivity through east Contra Costa county, connecting to SR 242 and Interstate 680 (I-680). To the east, the highway connects to I-5 and San Joaquin county. Where the route is grade-separated, the speed limit is posted at 65 miles per hour (mph), but is decreased to 50 to 55 mph where the route is at-grade. Since the route is access controlled, bicyclists and pedestrians are prohibited.

Balfour Road is a regional route that connects Brentwood to Deer Valley Road to the west and the Discovery Bay area to the east. Within Brentwood, this route is an urban arterial, with two through lanes in each direction, plus additional intersection turn lanes. However, at the eastern and western edges of the City, the street is a two-lane rural route. Within developed areas of the city, this route has a posted speed limit of 45 mph, which increases to 55 mph in rural areas. There are generally sidewalks and bicycle lanes along the route within the city; however, there are no such facilities along the rural segments of this route.

Brentwood Boulevard was formerly designated as SR 4. Although SR 4 has officially opened on the west side of Brentwood, the original Brentwood Boulevard alignment remains a route of

regional significance since it connects to Main Street in Oakley to the north, and to the community of Byron to the south. The route generally has two lanes in each direction, including turn lanes at intersections in the core portion of Brentwood between Havenwood Avenue and Chestnut Street. The northern and southern portions of the corridor generally have one lane in each direction, with widening to include turn lanes at select intersections. Intermittent sidewalks are provided along the route, but there are gaps along the railroad tracks and along some undeveloped properties. There are no bicycle lanes along the route. The speed limit varies depending on the land-use along the route – within Downtown the speed limit is posted at 25 mph and within other areas of the city it is posted at 40 to 45 mph; however, in rural areas, the speed limit increases to 55 mph.

Deer Valley Road is not located within Brentwood, but it does provide regional connectivity between Brentwood and Antioch. Near Brentwood, Deer Valley Road is a two-lane rural route, but it widens to an urban arterial to the north in Antioch. There are no designated bicycle or pedestrian facilities along this corridor and the speed limit on the route is posted at 45 mph. This route also provides connectivity to the Kaiser Permanente Antioch Medical Center.

Fairview Avenue extends north-south through Brentwood and provides connectivity to residential, commercial, and employment centers. This route varies between one and two lanes per direction, plus turn lanes at intersections. Fairview Avenue terminates at Lone Tree Way to the north and SR 4-Vineyard Parkway to the south. In general, bicycle lanes and sidewalks are provided along the route, but there are some gaps where adjacent parcels have not been developed. On the northern portion of the route, the speed limit is posted at 35 mph, but it increases to 45 mph from Sand Creek Road to Balfour Road, and 35 mph south of Balfour Road.

Lone Tree Way is a regional route that connects to Antioch to the west and terminates just east of Brentwood Boulevard. The street varies between a rural character, with one lane in each direction, to an urban arterial with three lanes in each direction plus turn lanes. In urbanized areas, bicycle lanes and sidewalks are provided along the route, but in rural areas there are no such facilities. The speed limit on the western portion of the route is posted at 45 mph, but it decreases to 35 mph east of O'Hara Avenue.

Oak Street-Walnut Boulevard is a route that originates in Downtown and continues to the south beyond the city limits. Within the Downtown area, the posted speed limit is 25 mph. Speed limits gradually increase to 30 mph, 35 mph, 40 mph and ultimately to 45 mph going south away from Downtown. Sidewalks are provided along Oak Street, but there are no bicycle lanes. Along Walnut Boulevard, there are bicycle lanes and sidewalks within the urbanized areas; however, there are no such facilities in the rural areas. The route varies from two to four lanes within the city, and south of the city, is a two-lane rural route.

Marsh Creek Road is a rural route that is south of the city. Generally, there is one lane in each direction; however, additional turn lanes and through lanes are provided at some intersections.

There are no bicycle or pedestrian facilities along the route, but there is generally a paved shoulder that can be used by bicyclists and pedestrians. The speed limit is posted at 50 mph along Marsh Creek Road.

Vasco Road is a rural route with a 55-mph posted speed limit. Vasco Road begins at SR 4 to the north and ultimately continues south to connect to Livermore and I-580. Near Brentwood, the route has one lane in each direction, plus additional lanes at some intersections. There are no bicycle or pedestrian facilities; however, there is a paved shoulder that can be used by bicyclists and pedestrians.

Sand Creek Road is an east-west corridor in central Brentwood that currently terminates at SR 4 to the west and Garin Parkway to the east. In the future, Sand Creek Road will be extended westerly to Heidorn Ranch Road and easterly to Sellers Avenue. This route generally has two lanes in each direction and turn lanes at intersections plus sidewalks and bicycle lanes. The posted speed limit varies between 35 and 45 mph.

OTHER KEY CORRIDORS

The following major roadway corridors are not designated by CCTA as Routes of Regional Significance, but are key components of the city's roadway network.

Empire Avenue is an arterial with a north-south alignment. It continues into Antioch to the north and terminates into residential neighborhoods south of Grant Street to the south. South of Grant Street there is one lane in each direction, but the route widens to include two lanes in each direction north of Grant Street. Both bicycle lanes and sidewalks are provided along the route northeast of Shady Willow Lane. The speed limit is generally posted at 35 mph, but reduces to 25 mph west of Shady Willow Lane.

Shady Willow Lane is a north-south arterial connecting Sand Creek Road with Lone Tree Way, terminating at Slatten Ranch Road to the north. Generally, there are two lanes in each direction, but there are sections where the roadway passes through undeveloped parcels that have only one lane in each direction. Bicycle lanes are provided along Shady Willow Lane, and sidewalks are provided adjacent to developed parcels. The speed limit is posted at 35 mph with a school speed limit zone posted at 25 mph.

O'Hara Avenue is an arterial that terminates at Second Street near Downtown to the south, and continues into Antioch to the north. One lane is provided in each direction for most of the route; however, there are areas where additional lanes exist adjacent to major intersections. There are sidewalks and bicycle lanes provided along O'Hara Avenue and the speed limit is posted at 35 mph.

Minnesota Avenue between Balfour Road and Sand Creek Road is classified as an arterial. Beyond these limits, the route continues as a local street, terminating in residential neighborhoods on

either end. There is one lane provided in each direction, with additional lanes near major intersections. Bicycle lanes exist along Minnesota Avenue and sidewalks are provided adjacent to developed parcels. The speed limit is posted at 35 mph with a school zone speed limit posted at 25 mph.

San Jose Avenue is an east-west arterial that extends primarily between Fairview Avenue and SR 4; to the east, the corridor terminates in a residential neighborhood while to the west, the street will be extended in the future to Sand Creek Road. Generally, one vehicle lane plus a bicycle lane are provided in each direction. Sidewalks are provided adjacent to developed parcels. The speed limit is posted at 35 mph with a school zone speed limit posted at 25 mph.

Central Boulevard is classified as an arterial between Fairview Avenue and Brentwood Boulevard. Beyond these limits, the route continues into residential neighborhoods as a local street. There are generally two lanes in each direction along with bicycle lanes and sidewalks; however, between Griffith Lane and Dainty Avenue only one lane is provided in each direction and sidewalks are provided along only the north side of the route. The speed limit is posted at 35 mph, with a school speed zone posted with a limit of 25 mph.

Sellers Avenue south of Chestnut Street is classified as an arterial with one lane in each direction. Limited sidewalks are provided along the west side of the street south of Balfour Road, but no other sidewalks or bicycle lanes are provided along the street. The posted speed limit varies between 40 mph and 50 mph.

Bridle Gate Drive is a future north-south modified arterial roadway with two lanes in each direction, along with bicycle lanes and sidewalk, beginning at Sand Creek Road and extending north through the future Bridle Gate development. This route will provide north-south circulation to the properties north of Sand Creek Road and west of SR 4.

MAJOR INTERSECTIONS

The following 38 study intersections were identified as those most critical to Brentwood's local circulation system and its connectivity to the regional transportation network.

1. Lone Tree Way/Hillcrest Avenue
2. Lone Tree Way/SR 4 South Ramps
3. Lone Tree Way/SR 4 North Ramps
4. Lone Tree Way/Shady Willow Lane
5. Lone Tree Way/Empire Avenue
6. Lone Tree Way/Fairview Avenue
7. Lone Tree Way/Gann Street
8. Lone Tree Way/O'Hara Avenue
9. Lone Tree Way/Adams Lane
10. Lone Tree Way/Brentwood Boulevard
11. Fairview Avenue/Grant Street
12. Brentwood Boulevard/Grant Street
13. Sand Creek Road/SR 4 South Ramps
14. Sand Creek Road/SR 4 North Ramps
15. Sand Creek Road/Shady Willow Lane
16. Sand Creek Road/Fairview Avenue
17. Sand Creek Road/Minnesota Avenue
18. Sand Creek Road/O'Hara Avenue
19. Sand Creek Road/Brentwood Boulevard
20. Fairview Avenue/San Jose Avenue

21. Fairview Avenue/Central Boulevard
22. Brentwood Boulevard/Central Boulevard
23. Brentwood Boulevard/Second Street
24. Brentwood Boulevard/Oak Street
25. Walnut Boulevard/Oak Street
26. Balfour Road/Deer Valley Road
27. Balfour Road/American Avenue
28. Balfour Road/Foothill Drive
29. Balfour Road/John Muir Parkway
30. Balfour Road/Eagle Rock Avenue
31. Balfour Road/SR 4 South Ramps (future)
32. Balfour Road/SR 4 North Ramps (future)
33. Balfour Road/Fairview Avenue
34. Balfour Road/Minnesota Avenue
35. Balfour Road/Griffith Lane
36. Balfour Road/Walnut Boulevard
37. Balfour Road/Brentwood Boulevard
38. Marsh Creek Road/SR 4-Vasco Road

Traffic volumes at the study intersections were obtained in October and November 2012, while all area schools were in session. The locations of the study intersections and the existing lane configurations are shown on Figures 3.13-2A and 3.13-2B, and the peak hour traffic volumes are shown in Figures 3.13-3A and 3.13-3B.

Bicycle and Pedestrian System

The following section describes the bicycle and pedestrian network in Brentwood. Bicycle and pedestrian volumes were collected during the weekday PM peak hour in October and November 2012 at 20 of the same study intersections where vehicle volumes were obtained. These bicycle and pedestrian volumes are shown in Figure 3.13-4 both for the peak hour and the calculated daily annual average. Daily averages were derived using factors obtained from the National Bicycle and Pedestrian Documentation Project (NBPD) count adjustment factors published in 2009 (see http://bikepeddocumentation.org).

Primary pedestrian and bicycle activity centers include Downtown, the Brentwood Civic Center and adjacent government buildings, parks and trails, schools, places of worship, shopping centers, business parks, medical centers, and retail and commercial destinations along Lone Tree Way, Sand Creek Road, and Balfour Road. Jobs and employers are distributed throughout Brentwood and largely consist of local independent retailers, food service, commercial and professional businesses, government, and light industrial.

BICYCLE FACILITIES

Bicycle circulation in Brentwood is supported by an existing network of off-street multi-use paths, on-street bike lanes, and bicycle routes. Notable facilities include a segment of the Mokelumne Coast to Coast Trail, Marsh Creek Trail, Miwok Trail, and Sand Creek Trail. Additionally, bicycle lanes are provided on most arterial and collector streets; however, there are some gaps in lanes near intersections and where adjacent parcels have not been developed. The *Countywide Bicycle and Pedestrian Master Plan*, shown in Figure 3.13-5, expands upon the existing network to create a robust bicycle circulation system in Brentwood.

Brentwood has been designated as a "Bicycle Friendly Community" by the League of American Bicyclists. The bronze-level certification was awarded to Brentwood for its network of trails,

including several grade-separated crossings of major streets. Additionally, the League of American Bicyclists indicates that one of the reasons for this certification is that the City includes in its budget funding for Parks, Engineering, Planning, and Police Department staff to take training courses to accommodate cyclists.

PEDESTRIAN FACILITIES

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal infrastructure, curb ramps, and streetscape amenities. Nearly complete sidewalk coverage, accessible curb ramps, and marked crosswalks are provided along arterial streets in Brentwood; however, there are some gaps in coverage where adjacent parcels have not been developed. All signalized intersections with connecting sidewalk facilities have marked crosswalks and pedestrian signal crossing equipment. Additionally, sidewalks are provided along the vast majority of residential streets in the city.

BICYCLE AND PEDESTRIAN BARRIERS

A variety of physical barriers exist in Brentwood that both shape transportation patterns and/or inhibit access for people in cars, on foot, or on bicycle. Existing transportation corridors (such as SR 4 and the UPRR corridor), as well as land use development patterns and topography, can all impact mobility.

In general, facilities along major arterials vary depending on the level of development along the street. There are situations where adjacent parcels have not been developed and, therefore, the street is not fully built-out. Where this occurs, there may be a reduction in vehicle lanes, but gaps in bicycle and pedestrian facilities typically also result until such time that adjacent development occurs.

Public Transportation System

Transit service in Brentwood is primarily provided in the form of bus service operated by the Eastern Contra Costa Transit Authority's (ECCTA) Tri Delta service. Additionally, regional commuter service is provided by the Bay Area Rapid Transit District (BART), which currently terminates in the nearby community of Pittsburg. An exhibit showing bus routes in and surrounding the city is provided in Figure 3.13-6.

TRI DELTA TRANSIT

Tri Delta Transit is the primary transit provider in Brentwood; it provides regularly-scheduled fixed-route service to major activity centers and transit hubs within eastern Contra Costa county. Tri Delta Transit operates seven routes that serve the city of Brentwood, five of which are operated on weekdays only and two of which are operated on weekends and holidays only. The following routes serve Brentwood:

Route 300 is an express route connecting the Brentwood Park and Ride facility with Antioch and the Pittsburg/Bay Point BART Station. The route runs on weekdays only and the frequency varies between 10 minutes during peak periods and up to 40 minutes during off-peak periods.

Route 383 is a loop route connecting Brentwood with Oakley and Antioch. It generally operates on approximately one-hour headways between 8:30 AM and 4:00 PM in the counterclockwise direction with an additional evening bus. Additional early morning service is provided twice daily in the clockwise direction.

Route 385 provides connectivity between the Brentwood and Antioch Park and Ride facilities, running by several schools, major shopping areas, and employment centers. The route generally runs at hourly headways, but at peak periods the frequency is increased to 30 to 40 minutes. The route is operated on weekdays only.

Route 386 connects Brentwood with the communities of Discovery Bay and Byron. The route runs twice daily, on weekdays, once during the morning commute period and once during the evening commute period.

Route 391 is a local route that connects the Brentwood Park and Ride facility with Los Medanos College and the Pittsburg/Bay Point BART Station. This weekday-only route operates on 30-minute headways during the peak periods, but the headways vary from 30 minutes to two hours during off-peak periods.

Route 393 provides weekend and holiday service between Brentwood, Antioch, and the Pittsburg/ Bay Point BART station. Generally, the route runs on one-hour headways between 5:30 AM and 9:30 PM, with additional late night service provided in the eastbound direction only going from the BART Station to Antioch and Brentwood.

Route 395 is a loop route providing weekend and holiday service between the Antioch Park and Ride facility and commercial areas along Lone Tree Way and Sand Creek Road in Brentwood. The route operates on one-hour headways between 8:40 AM and 8:00 PM.

Front loading bicycle racks, which can accommodate two bicycles, are provided on all fixed route transit buses in the Tri Delta system. Bicycle rack spaces are available on a first come, first served basis. When the front loading racks are full, drivers can accommodate bicycles inside the bus at their discretion. Additionally, Tri Delta offers bicycle lockers at the Brentwood Park and Ride facility which are available on a first come, first served basis.

BAY AREA RAPID TRANSIT

The Bay Area Rapid Transit District (BART) provides regional heavy-rail transit services within Contra Costa, Alameda, San Francisco, and San Mateo counties, with construction underway to extend service to Santa Clara county. Currently, the nearest BART station is located in Pittsburg/

Bay Point; however, a supplementary service, eBART, is under construction to connect communities east of Pittsburg with BART. eBART will not be an extension of the BART trains, but will be a supplementary rail service to coordinate with the arrival/departure of BART trains at the Pittsburg/Bay Point Station. Currently, the extension to Antioch is under construction and is expected to begin service in 2016. There are long-term plans to extend the eBART service along the SR 4 corridor to a station in Brentwood near the EBMUD Mokelumne trail, approximately midway between the Lone Tree Way and Sand Creek Road freeway interchanges.

On weekdays, existing BART service is provided on 15-minute headways with some additional trains provided during the peak commute periods. During weekday nights (after 8:00 PM) and weekends, service is provided on 20-minute headways. Bicycles are allowed on all trains. Bicycle racks and a limited number of bicycle lockers are available at the Pittsburg/Bay Point Station.

PARATRANSIT

Paratransit, also known as dial-a-ride or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. Individuals must be registered and certified as ADA eligible before using the service. Paratransit operators are required by the ADA to service areas within three-quarters of a mile of their respective public fixed-route service. ECCTA serves as the ADA paratransit operator for Brentwood.

PARK AND RIDE LOTS

A park and ride lot is located on Walnut Boulevard, north of Dainty Avenue. The facility is served by Tri Delta Transit, and riders can access both local bus service as well as express bus service to the Pittsburg/Bay Point BART Station. Both bicycle racks and secured bicycle lockers are provided at the park and ride lot. Riders must apply with Tri Delta Transit to use bicycle lockers, and they are available on a first come, first served basis.

TAXI SERVICE

Taxi service in Brentwood is provided by private operators that serve the greater east Contra Costa county area and beyond. Taxi service is available 24 hours a day, seven days a week by calling in a service request.

Goods Movement System

Section §10.16 of the Brentwood Municipal Code establishes the City's authority to designate truck routes within the city. Currently, Brentwood Boulevard and Lone Tree Way are designated as truck routes, as are portions of Balfour Road and Walnut Boulevard. The Municipal Code allows truck drivers to use other city streets as well, provided those streets comprise the most direct route between the nearest truck route and the freight origin or destination, unless such movements are expressly prohibited by posted signs.

Rail Freight Transportation

Although there is a rail corridor in Brentwood owned by Union Pacific Railroad (UPRR), referred to as the Mococo line, it is not currently in regular use. The Mococo line is a minor rail branch that connects to major UPRR facilities in Martinez and Tracy. It is possible that in the future the corridor may be reactivated to resume carrying rail freight through the city. According to the Federal Railroad Administration Office of Safety Analysis website, no train collisions were reported in Brentwood for the 10-year period between 2003 and 2013.

METHODS OF ANALYSIS

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents over-capacity, stop-and-go conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

Intersections

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2010. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The Levels of Service for intersections controlled by a traffic signal were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. Detailed methodology assumptions applied to the operational analysis are provided in the technical appendix.

The Level of Service for the side-street stop controlled intersection at Balfour Road/Deer Valley Road was analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for the controlled approach with the highest delay.

The ranges of delay associated with the various levels of service are indicated in Table 3.13- 1.

TABLE 3.13- 1: INTERSECTION LEVEL OF SERVICE CRITERIA		
LOS	*SIGNALIZED*	*TWO-WAY STOP-CONTROLLED*
A	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.
B	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.
C	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting at the side street.
D	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.
E	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.
F	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting side streets, creating long queues.

REFERENCE: HIGHWAY CAPACITY MANUAL, TRANSPORTATION RESEARCH BOARD, 2010

Rural Road Segments

Levels of service on key rural roadway segments were determined using the HCM 2010 "Two Lane Highway" methodology. The methodology considers traffic volumes, terrain, roadway cross section, the proportion of heavy vehicles, and the amount of no-passing zones. LOS is based on the percent time spent following (PTSF) estimate produced by the methodology, as well as the classification of the roadway. For the rural road segments analyzed in this study, Deer Valley Road and Walnut Boulevard were defined as Class II roadways while the remaining corridors were defined as Class I Roadways. A summary of the PTSF breakpoints is shown in Table 3.13- 2.

TABLE 3.13- 2: RURAL ROAD LEVEL OF SERVICE CRITERIA		
LOS	*CLASS I*	*CLASS II*
A	≤ 35 PTSF	≤ 40 PTSF
B	> 35-50 PTSF	> 40-55 PTSF
C	> 50-65 PTSF	> 55-70 PTSF
D	> 65-80 PTSF	> 70-85 PTSF
E	> 80 PTSF	> 85 PTSF
F	Capacity exceeds 1,700 vphpl	Capacity exceeds 1,700 vphpl

PTSF = PERCENT TIME SPENT FOLLOWING, VPHPL=VEHICLES PER HOUR PER LANE

Under future buildout conditions, several Routes of Regional Significance have been identified by the CCTA Congestion Management Plan and/or City of Brentwood Capital Improvement Program to be widened to two lanes in each direction. These routes were analyzed using Multilane Highway methodologies published in Chapter 14 of the HCM. The metric used to determine the LOS of a multilane highway is density, measured as passenger cars per mile per lane (pc/mi/ln), with consideration included for the free-flow speed of the facility. For LOS D or better operations, the density thresholds established are identical for all free-flow speeds. However, for LOS E and LOS F, the density thresholds vary based on the facility's free-flow speed. The summary of density breakpoints is shown in Table 3.13- 3.

TABLE 3.13- 3: MULTILANE HIGHWAY LEVEL OF SERVICE CRITERIA

LOS	*FREE-FLOW SPEED (MPH)*	*DENSITY (PC/MI/LN)*
A	All	>0-11
B	All	>11-18
C	All	>18-26
D	All	>26-35
E	60	>35-40
	55	>35-41
	50	>35-43
	45	>35-45
F	60	>40
	55	>41
	50	>43
	45	>45

MPH = MILES PER HOUR; PC/MI/LN=PASSENGER CARS PER MILE PER LANE

Freeways

The *East County Action Plan for Routes of Regional Significance* establishes the delay index as a Multimodal Transportation Service Objective (MTSO). The delay index is the ratio of actual travel times on a facility divided by the travel times that occur during non-congested free-flow periods. Near Brentwood, this standard applies to SR 4 west of Lone Tree Way. The free-flow speed of the freeway is considered to be 65 mph.

EXISTING LEVELS OF SERVICE

Intersections

Existing intersection operation reflects traffic volumes collected in the fall of 2012, prior to the opening of the Sand Creek Road freeway interchange. The list of study intersections also includes future freeway ramps at Balfour Road that do not yet exist. As a result, the "existing conditions" analysis presents results for 36 study intersections while the buildout scenarios include 38 intersections. Currently, 34 of the 36 study intersections are operating at LOS D or better. The intersections of Sand Creek Road/SR 4 and Balfour Road/Foothill Drive are both operating at LOS E during the AM peak hour. It should be noted that since the intersection of Sand Creek Road/SR 4 recently became grade-separated, congestion has reduced dramatically. A summary of the intersection level of service calculations is contained in Table 3.13-4, and the LOS calculation sheets are included in the technical appendix.

TABLE 3.13- 4: SUMMARY OF EXISTING PEAK HOUR INTERSECTION LEVELS OF SERVICE

INTERSECTION	*AM PEAK HOUR*		*PM PEAK HOUR*	
	DELAY	*LOS*	*DELAY*	*LOS*
1. Lone Tree Way/Hillcrest Avenue	17.6	B	16.9	B
2. Lone Tree Way/SR 4 South Ramps[1]	10.7	B	14.4	B
3. Lone Tree Way/SR 4 North Ramps[1]	5.4	A	8.9	A
4. Lone Tree Way/Shady Willow Lane	18.1	B	22.4	C
5. Lone Tree Way/Empire Avenue	14.9	B	21.3	C
6. Lone Tree Way/Fairview Avenue	12.8	B	18.3	B
7. Lone Tree Way/Gann Street	11.3	B	9.2	A
8. Lone Tree Way/O'Hara Avenue	21.5	C	20.7	C
9. Lone Tree Way/Adams Lane	9.7	A	8.5	A
10. Lone Tree Way/Brentwood Boulevard	15.9	B	15.2	B
11. Fairview Avenue/Grant Street	8.7	A	8.2	A
12. Brentwood Boulevard/Grant Street	19.8	B	17.3	B
14. Sand Creek Road/SR 4	**55.0**	**E**	31.5	C
15. Sand Creek Road/Shady Willow Lane	15.0	B	15.2	B
16. Sand Creek Road/Fairview Avenue	26.7	C	20.8	C
17. Sand Creek Road/Minnesota Avenue	17.4	B	11.5	B
18. Sand Creek Road/O'Hara Avenue	17.6	B	16.1	B
19. Sand Creek Road/Brentwood Boulevard	15.2	B	14.3	B
20. Fairview Avenue/San Jose Avenue[2]	19.1	B	10.0	A
21. Fairview Avenue/Central Boulevard	20.5	C	13.9	B
22. Brentwood Boulevard/Central Boulevard	12.5	B	13.0	B
23. Brentwood Boulevard/Second Street	21.6	C	12.3	B
24. Brentwood Boulevard/Oak Street[1]	18.1	B	15.7	B
25. Walnut Boulevard/Oak Street	13.1	B	27.2	C
26. Balfour Road/Deer Valley Road[3]	27.0	D	13.5	B
27. Balfour Road/American Avenue	**65.0**	**E**	11.8	B
28. Balfour Road/Foothill Drive	33.3	C	12.4	B
29. Balfour Road/John Muir Parkway	5.8	A	6.2	A
30. Balfour Road/Eagle Rock Avenue	19.6	B	14.6	B
32. Balfour Road/SR 4	50.9	D	26.5	C
33. Balfour Road/Fairview Avenue	26.6	C	17.3	B
34. Balfour Road/Minnesota Avenue	13.4	B	11.5	B
35. Balfour Road/Griffith Lane	17.4	B	15.8	B
36. Balfour Road/Walnut Boulevard	15.3	B	16.6	B
37. Balfour Road/Brentwood Boulevard	26.3	C	18.8	B
38. Marsh Creek Road/SR 4-Vasco Road	12.0	B	13.3	B

DELAY IS MEASURED IN AVERAGE SECONDS PER VEHICLE; LOS = LEVEL OF SERVICE; ***BOLD****=EXCEEDS LOS STANDARDS*

[1]ANALYZED USING SYNCHRO LANE UTILIZATION BALANCING METHODOLOGIES

[2]LOS BASED ON HCM 2000 METHODOLOGY

[3]DELAY ON STOP-CONTROLLED WESTBOUND APPROACH

Rural Road Segments

Currently, four of the rural routes studied operate at LOS D or better during the AM and PM peak hours. The segment of Vasco Road between Walnut Boulevard and Camino Diablo Road operates at LOS E in both directions during both the AM and PM peak hours. Additionally, SR 4 between Marsh Creek Road and the San Joaquin county line operates at LOS E in the eastbound direction during the AM peak hour and the westbound direction during the PM peak hour. Marsh Creek Road between SR 4 and Byron Highway operates at LOS E in the eastbound direction during only the PM peak hour. It should be noted that while the HCM methodology calculates the roadway segment's volume-to-capacity ratio, LOS is determined based on the percent time spent following (PTSF) metric. In some cases, this results in roadways being reported at a poor LOS even though the volume-to-capacity ratio appears favorable. The level of service calculations are summarized in Table 3.13-**5**, and the LOS calculation sheets are included in the technical appendix.

TABLE 3.13- 5: PEAK HOUR RURAL ROADWAY LOS

SEGMENT	*CLASS*	*AM PEAK HOUR*			*PM PEAK HOUR*		
		V/C	*PTSF*	*LOS*	*V/C*	*PTSF*	*LOS*
Deer Valley Road – Sand Creek Road to Balfour Road	II						
Northbound		0.29	69.6	C	0.26	66.3	C
Southbound		0.23	60.9	C	0.26	68.2	C
Deer Valley Road – Balfour Road to Briones Valley Road	II						
Northbound		0.05	20.1	A	0.17	63.3	C
Southbound		0.18	64.1	C	0.05	20.8	A
Marsh Creek Road – SR 4 to Byron Highway	I						
Eastbound		0.18	50.2	D	0.41	**81.0**	**E**
Westbound		0.36	77.4	D	0.24	58.4	D
Walnut Boulevard – Armstrong Road to Vasco Road	II						
Northbound		0.10	31.8	A	0.38	75.0	D
Southbound		0.33	74.4	D	0.12	37.1	A
Vasco Road – Walnut Boulevard to Camino Diablo Road	I						
Northbound		0.22	**53.0**	**E**	0.86	**94.1**	**E**
Southbound		0.66	**88.6**	**E**	0.31	**66.9**	**E**
Brentwood Boulevard – Guthrie Lane to Marsh Creek Road	I						
Northbound		0.21	58.3	C	0.29	69.3	D
Southbound		0.25	64.9	C	0.25	62.9	C
SR 4 – Marsh Creek Road to County Line	I						
Eastbound		0.46	**81.6**	**E**	0.41	77.2	D
Westbound		0.38	73.9	D	0.50	**83.0**	**E**

NOTES: V/C = VOLUME TO CAPACITY RATIO; PTSF = PERCENT TIME SPENT FOLLOWING
*LOS = LEVEL OF SERVICE; **BOLD**=EXCEEDS LOS STANDARD*

State Route 4 (SR 4)

Actual travel times are determined by conducting several "floating car" runs on the segment during the PM peak hour, and determining the average travel time between two constant points (in this case the overpasses at Lone Tree Way and SR 160). Based on peak hour travel time runs, the segment of SR 4 between SR 160 in Antioch and Lone Tree Way in Brentwood is currently operating at or above free-flow speeds in the westbound direction, and somewhat below free-flow

speeds in the eastbound direction during the PM peak hour. This information was supplemented with typical travel time data published by the Metropolitan Transportation Commission (MTC) on its www.511.org website during the AM peak hour, which indicates that the route currently operates at a delay index of no more than 1.4. The delay index calculations are summarized in Table 3.13- 7.

TABLE 3.13- 7: PEAK HOUR DELAY INDEX ON SR 4 – SR 160 TO LONE TREE WAY

	AM PEAK HOUR		*PM PEAK HOUR*	
	EASTBOUND	*WESTBOUND*	*EASTBOUND*	*WESTBOUND*
Average Speed	53.5 mph	47.0 mph	49.8 mph	67.6 mph
Free Flow Speed	65.0 mph	65.0 mph	65.0 mph	65.0 mph
Delay Index	1.2	1.4	1.3	≤ 1.0

3.13.2 REGULATORY SETTING

The General Plan, along with a variety of regional, State, and Federal plans, legislation, and policy directives provide guidelines for the safe operation of streets and transportation facilities in Brentwood. While the City of Brentwood has primary responsibility for the maintenance and operation of local transportation facilities in its jurisdiction, Brentwood staff works on a continual basis with responsible regional, State, and Federal agencies, including Contra Costa County, CCTA, the Metropolitan Transportation Commission (MTC), the California Department of Transportation (Caltrans), and the Federal Highway Administration, as well as others, to maintain, improve, and balance the competing transportation needs of the community and the region.

STATE

California Complete Streets Act

In 2008, AB 1358, the California Complete Streets Act of 2008, was signed into law. As of January 2011, AB 1358 requires any substantive revision of the circulation element of a city or county's general plan to identify how it will safely accommodate the circulation of all users of the roadway, including pedestrians, bicyclists, children, seniors, individuals with disabilities, and transit riders, as well as motorists.

Caltrans

DEPUTY DIRECTIVE 64-R1: COMPLETE STREETS – INTEGRATING THE TRANSPORTATION SYSTEM

In 2001, Caltrans adopted Deputy Directive 64; a policy directive related to non-motorized travel throughout the state. In October 2008, Deputy Directive 64 was strengthened to reflect changing priorities and challenges. DD 64-R1 states:

> *The Department views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in California and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system. Providing safe mobility for all users, including motorists, bicyclists, pedestrians and transit riders, contributes to the Department's mission/vision: "Improving Mobility across California."*

DIRECTOR'S POLICY 22 (DP-22), "DIRECTOR'S POLICY ON CONTEXT SENSITIVE SOLUTIONS"

Director's Policy 22, a policy regarding the use of "Context Sensitive Solutions" on all State highways, was adopted by Caltrans in November of 2001. The policy reads:

> *The Department uses "Context Sensitive Solutions" as an approach to plan, design, construct, maintain, and operate its transportation system. These solutions use innovative and inclusive approaches that integrate and balance community, aesthetic, historic, and environmental values with transportation safety, maintenance, and performance goals. Context sensitive solutions are reached through a collaborative, interdisciplinary approach involving all stakeholders.*
>
> *The context of all projects and activities is a key factor in reaching decisions. It is considered for all State transportation and support facilities when defining, developing, and evaluating options. When considering the context, issues such as funding feasibility, maintenance feasibility, traffic demand, impact on alternate routes, impact on safety, and relevant laws, rules, and regulations must be addressed.*

The policy recognizes that "in towns and cities across California, the State highway may be the only through street or may function as a local street;" that "these communities desire that their main street be an economic, social, and cultural asset as well as provide for the safe and efficient movement of people and goods;" and that "communities want transportation projects to provide opportunities for enhanced non-motorized travel and visual quality." The policy acknowledges that addressing these needs will assure that transportation solutions meet more than just traffic and operational objectives.

REGIONAL

METROPOLITAN TRANSPORTATION COMMISSION (MTC)

The current Regional Transportation Plan (RTP) produced by MTC, *Plan Bay Area*, was adopted in 2013. Plan Bay Area sets forth regional transportation policy and provides capital program planning for all regional, State, and Federally funded projects. In addition, Plan Bay Area provides strategic investment recommendations to improve regional transportation system performance over the next 25 years. Investments in regional highway, transit, local roadway, bicycle, and pedestrian projects are set forth. These projects have been identified through regional and local transportation planning processes, and in Contra Costa county include those projects listed in the

CCTA's Congestion Management Program. Project recommendations are premised upon factors related to existing infrastructure maintenance, increased transportation system efficiencies, improved traffic and transit operations, and strategic expansions of the regional transportation system.

CONTRA COSTA TRANSPORTATION AUTHORITY (CCTA)

CCTA acts as the countywide planning and programming agency for transportation related issues in Contra Costa county. CCTA plays a leading role in transportation by managing the county's transportation sales tax program (Measure J), securing transportation funds, providing project oversight, and initiating long term planning activities. Every two years CCTA updates the Congestion Management Plan (CMP), which:

- sets standards for and assesses performance of the countywide circulation system;
- establishes a list of prioritized capital improvements needed to maintain performance of the circulation network over the next seven years;
- determines the process for evaluating land use decisions and their impacts to the regional roadway system;
- provides a travel demand element that promotes circulation by modes other than single-occupant vehicles; and
- establishes the countywide circulation improvements to be incorporated into MTC's Regional Transportation Improvement Program.

CCTA also maintains the regional transportation demand model, which contains a full database of existing and future land use projections, as well as current and planned circulation networks. The model is used to determine and assess the effectiveness of circulation network improvements, and to evaluate the circulation impacts associated with land use decisions such as the Brentwood General Plan Update.

Measure J was passed by Contra Costa County voters in November 2004, assessing a half-cent sales tax on purchases made throughout the county to provide direct funding for local transportation projects. Measure J also includes a growth management program that assists local and regional agencies in planning for growth through 2035, facilitating cooperation among jurisdictions and creating a regional mitigation fee program.

Measure J funds are dedicated to the specific programs and projects specified in *Measure J: Contra Costa's Transportation Sales Tax Expenditure Plan*, CCTA, as amended through November 2011. Programs include funding for bus services, paratransit, Safe Routes to School, congestion management and transportation planning programs, and the Growth Management Program. Measure J projects in the Brentwood area include major infrastructure improvements such as SR 4, safety and capacity improvements on major streets, local street maintenance and improvements, One Bay Area grants, and new facilities for pedestrians and bicyclists.

The Growth Management Program (GMP) included in Measure J sets performance standards for regional corridors, as well as procedures for evaluating major land use changes or General Plan amendments. These procedures and standards are outlined in the *Growth Management Implementation Guide*, CCTA, 2010. The GMP defines Routes of Regional Significance throughout the county, and requires the preparation of sub-regional "action plans" that specify how performance on each of these routes is to be maintained and assessed. The *East County Action Plan for Routes of Regional Significance*, CCTA, 2009, defines the performance criteria to be applied on designated routes of regional significance in and surrounding Brentwood.

COUNTYWIDE BICYCLE AND PEDESTRIAN PLAN

In 2009, CCTA updated the *Countywide Bicycle and Pedestrian Plan.* While CCTA does not directly build, operate, or maintain bicycle or pedestrian facilities, it does allocate State and Federal funds to be used for these purposes. Therefore, the Plan serves as a guide for prioritizing funding throughout the county. Funding for pedestrian facilities is prioritized for pedestrian-oriented districts, routes to transit, and routes to other key activity centers.

Through the original 2003 Plan, later revised in 2009, CCTA established a Countywide Bicycle Network (CBN) which consisted of approximately "246 miles of off-street bikeways and 230 miles of on-street ones in Contra Costa, with an additional 470 miles of planned or proposed bikeways." In general the plan focuses on bikeways that serve as regional connections throughout the county and adjacent counties. Funding is prioritized for facilities identified in this plan.

The map of proposed and existing bicycle and pedestrian facilities in Brentwood was updated by CCTA in 2013 and is shown in Figure 3.13-5.

CITY OF BRENTWOOD

The Brentwood General Plan is a long-range comprehensive planning document required by State law, and was adopted by the City in 1993 to set policy and guide future growth, development, and conservation of resources. The Circulation and Growth Management Elements of the 1993 General Plan were last updated in 2001. The proposed project analyzed in this EIR is the 2014 update to the Brentwood General Plan. Relevant goals, policies, and actions from the General Plan Update are discussed in the Impacts and Mitigation Measures section of this EIR.

3.13.3 IMPACTS AND MITIGATION MEASURES

This section describes the transportation analysis of the General Plan and identifies potential impacts and mitigation measures that would be associated with its adoption. Quantitative roadway impact analysis was conducted for 2040 conditions assuming full buildout of the General Plan. A discussion of the transportation analysis methodology is included below, followed by the significance criteria, impact statements, and mitigation measures.

TRANSPORTATION ANALYSIS METHODOLOGY

The quantitative transportation analysis was performed using the methodology described below. For other components of the transportation system, the policy framework and actions for the General Plan were evaluated against the significance criteria.

Planned Circulation Improvements

A substantial number of circulation improvements in the vicinity of Brentwood have already been planned to accommodate future growth both at the local and regional level. The *2011 Contra Costa Congestion Management Program* (referred to herein as the CMP) contains projects that are proposed for programming through the State and Federal funding cycles. The CMP "includes projects already programmed; those proposed for programming through MTC's Regional Transportation Improvement Program and Federal processes; Transportation Fund for Clean Air bicycle projects; and developer-funded projects where funding through fee programs is imminent" (p. iv). The CMP identifies projects throughout Contra Costa county, including several within Brentwood, which have been deemed critical to regional circulation needs.

In addition to future improvements included in the regional CMP, Brentwood has identified circulation projects needed to support growth within the city. These projects are included in the *City of Brentwood 2013/14 - 2017/18 Capital Improvement Program* (referred to herein as the CIP). The CIP provides descriptions of the improvements, estimated costs, and sources of funding.

For the transportation analysis conducted for the General Plan Update, it was assumed that the circulation improvements identified in the regional CMP and Brentwood CIP will be in place at buildout. A summary of the circulation projects in and surrounding Brentwood that are contained in the regional CMP and Brentwood CIP is shown in Table 3.13-8.

TABLE 3.13-8: PLANNED BRENTWOOD AREA MAJOR TRANSPORTATION IMPROVEMENTS
FREEWAY/EXPRESSWAY PROJECTS
SR 4/Balfour Road Interchange – Construct full interchange (CMP)
SR 4/Marsh Creek Road Interchange – Construct full interchange (CMP)
SR 4/Vasco Road Interchange – Construct full interchange (CMP)
SR 239 Connection – New expressway connecting Brentwood to Tracy (CMP)
ARTERIAL/ROADWAY PROJECTS
Adams Lane Extension – Flood Control Channel to Lone Tree Way (CIP)
Amber Lane Improvements – Jeffery Way to Shady Willow Lane (CIP)
American Avenue Extension – Adams Middle School looping back to Balfour Road (CIP)
Anderson Lane Widening – Lone Tree Way to Neroly Road (CMP and CIP)
Armstrong Road Extension – Carnegie Lane to Mills Drive (CMP and CIP)
Armstrong Road Extension – Walnut Boulevard to Date Nut Street (CIP)
Balfour Road Shoulder Widening – Sellers Avenue to Bixler Road (CMP)
Balfour Road Widening – American Avenue to Deer Valley Road (CMP and CIP)
Brentwood Boulevard Widening (North) – north city limits to Havenwood Avenue (CMP and CIP)
Brentwood Boulevard Widening (South) – Chestnut Street to Fir Street (CMP and CIP)
Brentwood Boulevard Widening (South) – Marsh Creek Road to San Joaquin county line (CMP)
Brentwood Boulevard Widening (South) – Oak Street to Marsh Creek Road (CMP)
Brentwood Boulevard/Guthrie Lane – Traffic Signal (CIP)
Bridle Gate Drive Improvements – Sand Creek Road through Bridle Gate commercial (CIP)
Central Boulevard Widening – Dainty Avenue to Griffith Lane (CMP and CIP)
Citywide Traffic Signal Interconnect Program (CIP)
Concord Avenue Realignment – Creek Road to easterly boundary of SR 4 (CIP)
Dainty Avenue Improvements – Griffith Lane to Nicholas Court (CIP)
Deer Valley Road Widening – Sand Creek Road to Antioch city limits (CMP)
Empire Avenue Extension – Lone Tree Way to Neroly Road (CMP and CIP)
Empire Avenue Extension – Shady Willow Lane to Jeffery Way (CMP and CIP)
Fairview Avenue Improvements – Grant Street to Fairview Court (CIP)
Fairview Avenue Widening – Sand Creek Road to Apricot Way (CMP and CIP)
Griffith Lane Widening – Balfour Road to McClarren Road (CIP)
Heidorn Ranch Road Extension – EBMUD Aqueduct to Sand Creek Road extension (CMP and CIP)
Hillcrest Avenue Extension – Prewett Ranch to Balfour Road (CMP)
John Muir Parkway Extension – Foothill Drive to Briones Valley Road (CMP and CIP)
John Muir Parkway Extension – Ventura Drive to Foothill Drive (CIP)
John Muir Parkway Widening – Eagle Rock Avenue to Deer Creek Subdivision (CIP)
Lone Tree Way Widening – from 600' west of O'Hara Avenue to Brentwood Boulevard (CMP and CIP)
Lone Tree Way Widening and Railroad Undercrossing – Fairview Avenue to Gann Street (CMP and CIP)
Marsh Creek Road Widening – SR 4 to western city limits (CIP)
McClarren Road Widening – Griffith Lane to Pippo Avenue (CIP)

TABLE 3.13-8: PLANNED BRENTWOOD AREA MAJOR TRANSPORTATION IMPROVEMENTS
Minnesota Avenue Realignment – at Grant Street, west of UPRR (CMP and CIP)
Minnesota Avenue Widening – Balfour Road to Woodside Drive (CMP and CIP)
Oak Street/Garin Parkway – Traffic Signal (CIP)
O'Hara Avenue Improvements – Second Street to Sand Creek Road (CIP)
O'Hara Avenue Widening – Lone Tree Way to Neroly Road (CMP and CIP)
San Jose Avenue Extension – northwest extension to Sand Creek Road (CMP and CIP)
San Jose Avenue Extension – west of Sand Creek Road to city limits (CIP)
Sand Creek Road Extension – eastern city limits to Sellers Avenue (CIP)
Sand Creek Road Extension – SR 4 to Deer Valley Road (CMP)
Sand Creek Road Improvements – Brentwood Boulevard to eastern city limits (CIP)
Sellers Avenue Widening – southern boundary of school parcel to Sunset Road (CIP)
Sellers Avenue Widening – subdivision 7844 to southern city limits (CIP)
Sellers Avenue Widening – Sunset Road to Chestnut Street (CMP and CIP)
Sellers Avenue/Balfour Road – Traffic Signal (CMP)
Shady Willow Lane Widening – Lone Tree Way to Grant Street (CMP and CIP)
Sunset Road Widening – east city limits to Sellers Avenue (CMP and CIP)
Sycamore Avenue Extension – city limits to Sellers Avenue (CMP and CIP)
Walnut Boulevard Widening – Dainty Avenue to Central Boulevard (CMP and CIP)
PEDESTRIAN/BICYCLE PROJECTS
CCWD Trail parallel to SR 4 between Empire Avenue and Grant Street (CIP)
Citywide Trail Expansions and Improvements (CIP)
Mokelumne Trail Overcrossing – Bicycle and pedestrian overcrossing of SR 4 (CMP and CIP)
Sellers Avenue Detention Basin Trail – West Sellers Avenue between Chestnut Street and Balfour Road (CMP)
Sunset Park and Marsh Creek Trail connections north of Sunset Road (CIP)
TRANSIT PROJECTS
eBART Phase 2 – Commuter rail extension from Hillcrest Avenue to Byron (CMP)
Park and Ride Lots – Countywide to support Regional Express Bus Service (CMP)
Tri Delta Transit ITS – GPS, APC, signal priority, intelligent fare boxes (CMP)

Notes: CMP=2011 Contra Costa Congestion Management Program
CIP=City of Brentwood 2013/14 – 2017/18 Capital Improvement Program

Application of CCTA Travel Demand Model

Future traffic volumes for 2040 were determined using the CCTA regional travel demand model and in coordination with CCTA staff. The CCTA 2040 model network includes the major roadway infrastructure projects identified above in Table 3.13-8. The incremental change in traffic that would be generated by buildout of the proposed General Plan land use, compared to buildout of the current General Plan's land use, was added to future traffic associated with regional growth and travel patterns. The incremental differences in land uses between the current and proposed General Plan were analyzed using the City's land use inventory databases at the traffic analysis

zone (TAZ) level using the TAZ boundaries contained in the CCTA travel demand model. The traffic generation associated with land use changes in each TAZ were then determined using standard rates contained in the 2012 *Trip Generation Manual*, 9th Edition, Institute of Transportation Engineers (see further detail below). Depending on the types and intensities of land use changes proposed in the General Plan, the net change in trips at the TAZ level could increase, remain relatively unchanged, or decrease.

Growth in regional traffic through 2040 in locations *beyond* Brentwood was based on the CCTA's 2040 travel demand model, adjusted to hold land uses within Brentwood constant at levels allowed by the City's *current* General Plan, so that the increases in traffic associated with Brentwood's proposed General Plan could be assessed on a comparative basis using the detailed incremental changes in land use described above. Brentwood's incremental increase in trips was then assigned to the 2040 regional street network using special runs of the CCTA travel demand model. In other words, 2040 volumes were determined using a two-step application of the CCTA model: the first step determined regional traffic changes outside Brentwood, and the second step determined the traffic changes associated with the General Plan Update. These two components were then added to establish the projected 2040 traffic volumes. The 2040 volumes were determined at the link level and then translated to intersection turning movements using the "Furness" method, in combination with volume balancing in areas where the CCTA model did not include smaller study intersections.

In some cases, the 2040 modeling results predicted decreases in traffic volumes compared to existing counts on selected turning movements. Such decreases were generally minor and related to changes in the regional roadway network and how the model assigned future trips compared to existing trips. In order to maintain a conservative traffic analysis, any turning movements shown to have negative growth were generally disallowed, and a minimum growth rate of 0.5 percent per year was established instead. However, two locations, Lone Tree Way/Gann Street and Balfour Road/ American Avenue, were allowed to show a net decrease in turning movement volumes because new local streets are expected to be built in the immediate vicinity of these intersections which would provide alternative routes, and therefore redistribute current and future volumes at these intersections.

Land Use Assumptions

Two General Plan buildout scenarios were evaluated. The first examines the impacts associated with buildout of the General Plan within the current (2014) city limits. The second reflects impacts associated with buildout of the General Plan to the limits of the Planning Area. The net incremental increase in development associated with buildout of each of the two scenarios is shown in Table 3.13-9.

TABLE 3.13-9: NET INCREASE IN DEVELOPMENT BY GENERAL PLAN BUILDOUT SCENARIO		
GENERAL PLAN LAND USE	*WITHIN CITY LIMITS*	*TO PLANNING AREA*
Residential – Single Family	4,651 units	7,927 units
Residential – Multi-Family	5,321 units	5,687 units
Commercial – Regional	1,823.6 ksf	3,027.5 ksf
Commercial – General	2,834.5 ksf	3,238.8 ksf
Office	2,560.0 ksf	3,168.9 ksf
Industrial	2,162.1 ksf	2,935.5 ksf
Hotel	28.3 ksf	28.3 ksf
Church	136.8 ksf	136.8 ksf
College	5,000 students	5,000 students
Public/Institutional	265.8 ksf	269.3 ksf
Note: ksf = 1,000 square feet		

Trip Generation

APPLIED TRIP GENERATION RATES

When determining the potential amount of vehicle traffic generated by future development, transportation planners and engineers typically refer to the publication *Trip Generation Manual*, 9th Edition, 2012, by the Institute of Transportation Engineers (ITE). This publication is a standard reference used by jurisdictions throughout the country, and is based on actual trip generation studies performed at numerous locations in areas of various populations. The trip generation land use categories applied in the General Plan Update analysis are shown in Table 3.13-10.

TABLE 3.13-10: APPLIED ITE TRIP GENERATION RATES	
GENERAL PLAN AND/OR ZONING DESIGNATION	*ITE LAND USE CODE AND DESCRIPTION*
Single Family Residential	210 – Single Family Detached Housing
Multi-Family Residential	220 – Apartment
Multi-Family Residential (mixed-use areas) [1]	223 – Mid –Rise Apartment
General Commercial	820 – Shopping Center (average rate)
Regional Commercial	820 – Shopping Center (formula rate)
Office	710 – General Office
Industrial	110 – General Light Industrial
Hotel	310 – Hotel
Church	560 – Church
College	540 – Junior/Community College
Institutional/Public Uses	110 – General Light Industrial [2]

Notes: [1] *Applied within boundaries of Brentwood Boulevard Specific Plan, Downtown Specific Plan, and areas with MUPT zoning designation*

[2] *General Light Industrial rates applied to approximate Institutional/Public Uses*

PASS-BY TRIPS

Some portion of traffic associated with commercial uses is typically drawn from existing traffic on nearby streets. These vehicle trips are not considered "new," but are instead comprised of drivers who are already driving on the adjacent street and choose to make an interim stop. These types of trips are referred to as "pass-by." Based on data contained in the *Trip Generation Manual*, as well as guidance published by the CCTA, an average pass-by rate of 20 percent was applied to uses categorized as Shopping Center (ITE Land Use 820).

NET TRIPS ADDED AT BUILDOUT OF GENERAL PLAN

The net increases in vehicle trips that are projected to be added to Brentwood and the surrounding street network upon buildout of each of the two land use scenarios are shown in Table 3.13- **12**. A summary of the buildout land use and trip generation assumptions by traffic analysis zone (TAZ) is provided in the technical appendix.

TABLE 3.13- 12: NET ADDITIONAL VEHICLE TRIPS BY GENERAL PLAN BUILDOUT SCENARIO		
PERIOD	*WITHIN CITY LIMITS*	*TO PLANNING AREA*
Daily	283,331	380,704
AM Peak Hour	16,198	21,662
PM Peak Hour	27,941	37,828

CUMULATIVE TRAFFIC VOLUMES

The projected cumulative intersection turning movements are shown in Figures 3.13-7A and 3.13-7B for buildout to the city limits, and Figures 3.13-8A and 3.13-8B for buildout to the Planning Area. These traffic volumes reflect regional growth in addition to that projected under buildout of the General Plan.

General Plan Improvements

The planned future roadway network is depicted in Figure 3.13-9, which is also shown in General Plan Figure CIR-1. Table 3.13-11 summarizes the modifications needed to the city intersections to support buildout of the General Plan, as identified in General Plan Action CIR 1b.

TABLE 3.13-14: GENERAL PLAN ROADWAY IMPROVEMENTS

BUILDOUT TO CITY LIMITS
Lone Tree Way/SR 4 South Ramp – Reallocate eastbound lanes to two through lanes and two right-turn lanes.
Lone Tree Way/O'Hara Avenue – Widen the westbound approach to include a shared through/right-turn pocket lane. Modify the signal to include a right-turn overlap phase on the eastbound approach.
Lone Tree Way/Brentwood Boulevard – Modify signal to provide protected left-turns on the east and west legs. Eastbound: modify to provide a left-turn, through, and right-turn lane, and implement right-turn overlap signal phasing. Westbound: modify to provide a left-turn, through, and shared through-right lane. Northbound: modify to provide dual left-turn, single through, and single through-right lane.
Brentwood Boulevard/Grant Street – Modify signal to protected left-turn movements on the east and west legs. Eastbound: modify to provide one left-turn and one shared through-right lane. Westbound: widen to provide single left-turn, through, and right-turn lanes.
Sand Creek Road/Fairview Avenue – Widen the northbound approach to add a left-turn lane. Reconfigure the southbound approach to include a left-turn, through, and shared through-right lanes.
Fairview Avenue/San Jose Avenue – Reconfigure east and west approaches to include single left-turn and single through-right lanes. Modify signal to protected left-turn phasing on the east and west legs.
Balfour Road/Brentwood Boulevard – Widen to provide an additional northbound left-turn lane and westbound right-turn lane.
Walnut Boulevard between Armstrong Road and Vasco Road – Widen to two lanes in each direction.
BUILDOUT TO THE PLANNING AREA (IMPROVEMENTS IN ADDITION TO THOSE LISTED ABOVE)
Lone Tree Way/Fairview Avenue – Modify signal to provide protected left-turn phasing on the north and south legs.
Lone Tree Way/Brentwood Boulevard – Same improvements as identified above, plus widen the eastbound approach to include a second right-turn lane.
Brentwood Boulevard/Grant Street – same improvements as identified above, plus widen westbound and southbound approaches to include dual left-turn lanes. Widen northbound approach to add right-turn lane. Widen Sunset Road east of intersection to two eastbound lanes, approximately to McHenry Lane.
Sand Creek Road/SR 4 North Ramp – Add a second northbound right-turn lane.

TABLE 3.13-14: GENERAL PLAN ROADWAY IMPROVEMENTS
Sand Creek Road/O'Hara Avenue – Modify signal to provide right-turn overlap phases on the eastbound and westbound approaches.
Balfour Road/Deer Valley Road – Signalize intersection and widen to provide a southbound left-turn pocket.
Balfour Road/American Avenue – Widen to provide an eastbound right-turn lane.
Balfour Road/Fairview Avenue – Reconfigure northbound approach to include dual left-turn, single through, and shared through-right lanes.
Balfour Road/Walnut Boulevard – Modify signal to provide an eastbound right-turn overlap phase.
Balfour Road/Brentwood Boulevard – Same improvements as identified above, plus widen the eastbound approach to provide two left-turn lanes, a through lane and a right-turn lane.

THRESHOLDS OF SIGNIFICANCE

The following standards of significance are based on Appendix G of the CEQA Guidelines. The project would result in a significant impact on transportation if it would:

1. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;

    - Policy CIR 1-5 of the proposed General Plan establishes intersection level of service as a measure of effectiveness. A significant traffic-related impact would occur if implementation of the project would cause intersections to operate below the General Plan's standard of LOS D, or LOS E for intersections within the boundaries of the Downtown Specific Plan. Additional performance measures are established at the regional level as described below.

2. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

    The Contra Costa Transportation Authority is the designated congestion management authority for Brentwood and in the *East County Action Plan for Routes of Regional Significance* sets forth the following Multimodal Transportation Service Objective (MTSO) standards.

    - Freeways – a significant traffic impact would occur if the calculated Delay Index exceeds 2.5 during the peak hour. This applies to SR 4 freeway segments including the study freeway segment between the SR 160 and Lone Tree Way interchanges.

- Signalized Suburban Arterial Routes – a significant traffic impact would occur if a signalized intersection on the following corridors is projected to operate below LOS D.
  - Balfour Road;
  - Brentwood Boulevard;
  - Fairview Avenue;
  - Sand Creek Road;
  - Lone Tree Way; and
  - Oak Street-Walnut Boulevard.

- Non-Signalized Rural Roads – a significant traffic impact would occur if one or more of the following rural road corridors is projected to operate below LOS D.
  - Deer Valley Road;
  - Marsh Creek Road;
  - Walnut Boulevard (south of current Brentwood city limits);
  - Brentwood Boulevard (Balfour Road to Marsh Creek Road);
  - SR 4 (Marsh Creek Road to San Joaquin county line); and
  - Vasco Road.

3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
4. Substantially increase hazards due to a design feature;
5. Result in inadequate emergency access; or
6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

CUMULATIVE TRAFFIC IMPACT ANALYSIS

Intersections

With buildout of General Plan land uses and completion of the roadway improvements identified in Table 3.13-8 and Table 3.13-11, the 38 study intersections are projected to operate acceptably at LOS D or better under buildout to both the city limits and the Planning Area. A summary of the intersection level of service calculations for buildout conditions within the city limits is contained in Table 3.13-15, and a summary of calculations for buildout to the Planning Area is contained in Table 3.13-16. For reference purposes, levels of service are shown for conditions both with and without the improvements identified in Table 3.13-14. Intersection LOS calculations are provided in the technical appendix.

TABLE 3.13-15: SUMMARY OF PEAK HOUR INTERSECTION LEVELS OF SERVICE WITH GENERAL PLAN BUILDOUT TO CITY LIMITS

INTERSECTION	*AM PEAK HOUR*		*PM PEAK HOUR*	
	DELAY	*LOS*	*DELAY*	*LOS*
1. Lone Tree Way/Hillcrest Avenue	37.7	D	30.4	C
2. Lone Tree Way/SR 4 South Ramps[1]	20.2	C	**64.2**	**E**
with General Plan improvements	27.6	C	41.7	D
3. Lone Tree Way/SR 4 North Ramps[1]	7.1	A	9.9	A
4. Lone Tree Way/Shady Willow Lane	12.1	B	21.5	C
5. Lone Tree Way/Empire Avenue	21.1	C	25.1	C
6. Lone Tree Way/Fairview Avenue	20.7	C	37.6	D
7. Lone Tree Way/Gann Street	25.6	C	12.6	B
8. Lone Tree Way/O'Hara Avenue	**85.9**	**F**	43.0	D
with General Plan improvements	50.6	D	37.2	D
9. Lone Tree Way/Adams Lane	31.3	C	15.0	B
10. Lone Tree Way/Brentwood Boulevard	**170.0**	**F**	**78.0**	**E**
with General Plan improvements	54.1	D	50.1	D
11. Fairview Avenue/Grant Street	10.4	B	8.9	A
12. Brentwood Boulevard/Grant Street	42.8	D	**63.1**	**E**
with General Plan improvements	29.9	C	54.4	D
13. Sand Creek Road/SR 4 South Ramps	7.4	A	15.1	B
14. Sand Creek Road/SR 4 North Ramps	27.6	C	53.1	D
15. Sand Creek Road/Shady Willow Lane	22.2	C	39.0	D
16. Sand Creek Road/Fairview Avenue	**131.0**	**F**	48.2	D
with General Plan improvements	44.1	D	41.6	D
17. Sand Creek Road/Minnesota Avenue	36.1	D	16.6	B
18. Sand Creek Road/O'Hara Avenue	48.5	D	46.2	D
19. Sand Creek Road/Brentwood Boulevard	27.3	C	23.4	C
20. Fairview Avenue/San Jose Avenue	**208.2**	**F**	29.4	C
with General Plan improvements	26.7	C	15.9	B
21. Fairview Avenue/Central Boulevard	36.1	D	41.9	D
22. Brentwood Boulevard/Central Boulevard	28.2	C	13.6	B
23. Brentwood Boulevard/Second Street	48.9	D	21.0	C
24. Brentwood Boulevard/Oak Street[1]	46.1	D	26.3	C
25. Walnut Boulevard/Oak Street	38.3	D	27.9	C
26. Balfour Road/Deer Valley Road[2]	22.7	C	17.1	C
27. Balfour Road/American Avenue	53.7	D	23.1	C
28. Balfour Road/Foothill Drive	50.0	D	18.9	B
29. Balfour Road/John Muir Parkway	5.4	A	9.5	A
30. Balfour Road/Eagle Rock Avenue	11.0	B	12.1	B

TABLE 3.13-15: SUMMARY OF PEAK HOUR INTERSECTION LEVELS OF SERVICE WITH GENERAL PLAN BUILDOUT TO CITY LIMITS				
31. Balfour Road/SR 4 South Ramps	34.9	C	20.9	C
32. Balfour Road/SR 4 North Ramps	3.8	A	7.4	A
33. Balfour Road/Fairview Avenue	46.3	D	48.8	D
34. Balfour Road/Minnesota Avenue	21.0	C	9.4	A
35. Balfour Road/Griffith Lane	16.3	B	24.9	C
36. Balfour Road/Walnut Boulevard	44.0	D	33.8	C
37. Balfour Road/Brentwood Boulevard	**79.7**	**E**	37.2	D
with General Plan improvements	54.2	D	25.3	C
38. Marsh Creek Road/SR 4-Vasco Road	**134.2**	**F**	**172.4**	**F**
with General Plan improvements (SB Ramps)	11.9	B	17.6	B
with General Plan improvements (NB Ramps)	22.9	C	9.0	A

*DELAY IS MEASURED IN AVERAGE SECONDS PER VEHICLE; LOS = LEVEL OF SERVICE; **BOLD** = EXCEEDS LOS STANDARD*

[1]ANALYZED USING SYNCHRO LANE UTILIZATION BALANCING METHODOLOGIES

[2]DELAY ON STOP-CONTROLLED WESTBOUND APPROACH

TABLE 3.13-16: SUMMARY OF PEAK HOUR INTERSECTION LEVELS OF SERVICE WITH GENERAL PLAN BUILDOUT TO PLANNING AREA

INTERSECTION	*AM PEAK HOUR*		*PM PEAK HOUR*	
	DELAY	*LOS*	*DELAY*	*LOS*
1. Lone Tree Way/Hillcrest Avenue	39.4	D	34.7	C
2. Lone Tree Way/SR 4 South Ramps[1]	21.2	C	**67.2**	**E**
with General Plan improvements	26.3	C	47.5	D
3. Lone Tree Way/SR 4 North Ramps[1]	7.2	A	10.2	B
4. Lone Tree Way/Shady Willow Lane	11.8	B	16.4	B
5. Lone Tree Way/Empire Avenue	20.5	C	23.4	C
6. Lone Tree Way/Fairview Avenue	31.7	C	**57.5**	**E**
with General Plan improvements	31.6	C	35.1	D
7. Lone Tree Way/Gann Street	24.7	C	6.9	A
8. Lone Tree Way/O'Hara Avenue	**97.6**	**F**	**64.5**	**E**
with General Plan improvements	54.3	D	51.3	D
9. Lone Tree Way/Adams Lane	30.0	C	17.4	B
10. Lone Tree Way/Brentwood Boulevard	**200.2**	**F**	**93.5**	**F**
with General Plan improvements	53.8	D	41.8	D
11. Fairview Avenue/Grant Street	14.0	B	9.0	A
12. Brentwood Boulevard/Grant Street	**76.1**	**E**	**136.6**	**F**
with General Plan improvements	30.2	C	41.5	D
13. Sand Creek Road/SR 4 South Ramps	7.5	A	15.1	B
14. Sand Creek Road/SR 4 North Ramps	27.6	C	**61.5**	**E**
with General Plan improvements	28.6	C	36.7	D
15. Sand Creek Road/Shady Willow Lane	21.8	C	42.0	D
16. Sand Creek Road/Fairview Avenue	**155.2**	**F**	**57.4**	**E**
with General Plan improvements	46.8	D	36.6	D
17. Sand Creek Road/Minnesota Avenue	36.1	D	17.0	B
18. Sand Creek Road/O'Hara Avenue	52.6	D	**56.5**	**E**
with General Plan improvements	44.9	D	52.2	D
19. Sand Creek Road/Brentwood Boulevard	30.2	C	31.3	C
20. Fairview Avenue/San Jose Avenue[1]	**222.6**	**F**	30.7	C
with General Plan improvements	30.5	C	16.2	B
21. Fairview Avenue/Central Boulevard	40.6	D	50.6	D
22. Brentwood Boulevard/Central Boulevard	31.1	C	13.9	B
23. Brentwood Boulevard/Second Street	52.2	D	23.2	C
24. Brentwood Boulevard/Oak Street[1]	51.1	D	26.9	C
25. Walnut Boulevard/Oak Street[1]	53.8	D	30.2	C
26. Balfour Road/Deer Valley Road[2]	33.4	D	26.3	D
with General Plan improvements	11.6	B	22.0	C

TABLE 3.13-16: SUMMARY OF PEAK HOUR INTERSECTION LEVELS OF SERVICE WITH GENERAL PLAN BUILDOUT TO PLANNING AREA				
27. Balfour Road/American Avenue	**58.1**	**E**	29.3	C
with General Plan improvements	45.5	D	22.1	C
28. Balfour Road/Foothill Drive	48.5	D	10.1	B
29. Balfour Road/John Muir Parkway	5.5	A	9.5	A
30. Balfour Road/Eagle Rock Avenue	12.1	B	12.0	B
31. Balfour Road/SR 4 South Ramps	38.5	D	21.1	C
32. Balfour Road/SR 4 North Ramps	4.0	A	8.7	A
33. Balfour Road/Fairview Avenue	51.1	D	**63.0**	**E**
with General Plan improvements	33.0	C	44.5	D
34. Balfour Road/Minnesota Avenue[1]	20.8	C	9.5	A
35. Balfour Road/Griffith Lane	17.2	B	18.2	B
36. Balfour Road/Walnut Boulevard	**61.2**	**E**	**58.2**	**E**
with General Plan improvements	53.2	D	52.9	D
37. Balfour Road/Brentwood Boulevard	**96.5**	**F**	**56.2**	**E**
with General Plan improvements	48.5	D	39.9	D
38. Marsh Creek Road/SR 4-Vasco Road	**140.1**	**F**	**173.1**	**F**
with General Plan improvements (SB Ramps)	12.4	B	15.7	B
with General Plan improvements (NB Ramps)	24.0	C	13.7	B

DELAY IS MEASURED IN AVERAGE SECONDS PER VEHICLE; LOS = LEVEL OF SERVICE; ***BOLD*** *= EXCEEDS LOS STANDARD*

[1] *ANALYZED USING SYNCHRO LANE UTILIZATION BALANCING METHODOLOGIES*

[2] *DELAY ON STOP-CONTROLLED WESTBOUND APPROACH*

Roadway Segments

With buildout of General Plan land uses and completion of the roadway improvements identified in Table 3.13-8, in addition to the widening of Walnut Boulevard included in the General Plan, the study roadway segments are projected to operate acceptably at LOS D or better during the AM and PM peak hours under both scenarios evaluated. Roadway segment level of service calculations for buildout within the city limits are summarized in Table 3.13-17, and calculations for buildout to the Planning Area are summarized in Table 3.13-18. Copies of the calculations are provided in the technical appendix.

TABLE 3.13-17: SUMMARY OF ROADWAY SEGMENT LEVELS OF SERVICE WITH GENERAL PLAN BUILDOUT TO CITY LIMITS

SEGMENT	*CLASS*	*AM PEAK HOUR*			*PM PEAK HOUR*		
Deer Valley Road – Sand Creek Road to Balfour Road	II	*V/C*	*PTSF*	*LOS*	*V/C*	*PTSF*	*LOS*
Northbound		0.32	73.4	D	0.32	73.3	D
Southbound		0.26	63.8	C	0.29	68.8	C
Deer Valley Road – Balfour Road to Briones Valley Road	II	*V/C*	*PTSF*	*LOS*	*V/C*	*PTSF*	*LOS*
Northbound		0.07	27.0	A	0.29	71.5	D
Southbound		0.24	69.3	C	0.08	27.9	A
Marsh Creek Road – SR 4 to Byron Highway	Multi	*Speed*	*Density*	*LOS*	*Speed*	*Density*	*LOS*
Eastbound		45.0	7.8	A	45.0	8.2	A
Westbound		45.0	7.3	A	45.0	5.1	A
Walnut Boulevard – Armstrong Road to Vasco Road	II	*V/C*	*PTSF*	*LOS*	*V/C*	*PTSF*	*LOS*
Northbound		0.18	49.3	B	0.67	**87.8**	**E**
Southbound		0.85	**93.3**	**E**	0.14	41.3	B
with General Plan Improvements	*Multi*	*Speed*	*Density*	*LOS*	*Speed*	*Density*	*LOS*
Northbound		*45.0*	*3.4*	*A*	*45.0*	*12.9*	*B*
Southbound		*45.0*	*16.5*	*B*	*45.0*	*2.7*	*A*
Vasco Road – Walnut Boulevard to Camino Diablo Road	Multi	*Speed*	*Density*	*LOS*	*Speed*	*Density*	*LOS*
Northbound		55.0	25.5	C	54.3	29.3	D
Southbound		55.0	19.0	C	55.0	21.1	C
Brentwood Boulevard – Guthrie Lane to Marsh Creek Road	Multi	*Speed*	*Density*	*LOS*	*Speed*	*Density*	*LOS*
Northbound		45.0	19.1	C	45.0	8.2	A
Southbound		45.0	7.2	A	45.0	15.2	B
SR 4 – Marsh Creek Road to County Line	Multi	*Speed*	*Density*	*LOS*	*Speed*	*Density*	*LOS*
Eastbound		50.0	17.8	B	50.0	11.8	B
Westbound		50.0	8.7	A	50.0	17.0	B

*MULTI = MULTILANE HIGHWAY; V/C = VOLUME TO CAPACITY RATIO; PTSF = PERCENT TIME SPENT FOLLOWING; LOS = LEVEL OF SERVICE; SPEED IS MEASURED IN MILES PER HOUR (MPH); DENSITY IS MEASURED IN PASSENGER CARS PER HOUR PER LANE (PC/HR/LN); **BOLD**=EXCEEDS LOS STANDARD*

TABLE 3.13-18: SUMMARY OF ROADWAY SEGMENT LEVELS OF SERVICE WITH GENERAL PLAN BUILDOUT TO PLANNING AREA

SEGMENT	*CLASS*	*AM PEAK HOUR*			*PM PEAK HOUR*		
Deer Valley Road – Sand Creek Road to Balfour Road	II	*V/C*	*PTSF*	*LOS*	*V/C*	*PTSF*	*LOS*
Northbound		0.32	73.1	D	0.40	80.0	D
Southbound		0.29	68.7	C	0.31	68.3	C
Deer Valley Road – Balfour Road to Briones Valley Road	II	*V/C*	*PTSF*	*LOS*	*V/C*	*PTSF*	*LOS*
Northbound		0.08	28.0	A	0.31	71.8	D
Southbound		0.24	69.3	C	0.09	28.7	A
Marsh Creek Road – SR 4 to Byron Highway	Multi	*Speed*	*Density*	*LOS*	*Speed*	*Density*	*LOS*
Eastbound		45.0	7.8	A	45.0	8.9	A
Westbound		45.0	7.8	A	45.0	7.0	A
Walnut Boulevard – Armstrong Road to Vasco Road	II	*V/C*	*PTSF*	*LOS*	*V/C*	*PTSF*	*LOS*
Northbound		0.21	**54.7**	**F**[1]	1.00	**96.7**	**E**
Southbound		1.15	**99.5**	**F**	0.17	49.2	B
with General Plan Improvements	*Multi*	*Speed*	*Density*	*LOS*	*Speed*	*Density*	*LOS*
Northbound		*45.0*	*4.0*	*A*	*45.0*	*19.3*	*C*
Southbound		*45.0*	*22.2*	*C*	*45.0*	*3.3*	*A*
Vasco Road – Walnut Boulevard to Camino Diablo Road	Multi	*Speed*	*Density*	*LOS*	*Speed*	*Density*	*LOS*
Northbound		55.0	22.6	C	53.7	32.0	D
Southbound		55.0	19.5	C	55.0	21.2	C
Brentwood Boulevard – Guthrie Lane to Marsh Creek Road	Multi	*Speed*	*Density*	*LOS*	*Speed*	*Density*	*LOS*
Northbound		45.0	19.2	C	45.0	9.8	A
Southbound		45.0	7.5	A	45.0	19.0	C
SR 4 – Marsh Creek Road to County Line	Multi	*Speed*	*Density*	*LOS*	*Speed*	*Density*	*LOS*
Eastbound		50.0	18.6	C	50.0	15.2	B
Westbound		50.0	9.3	A	50.0	19.7	C

[1] *PEAK HOUR VOLUMES EXCEED 1,700 VEHICLES PER LANE, RESULTING IN LOS F; MULTI = MULTILANE HIGHWAY; V/C = VOLUME TO CAPACITY RATIO; PTSF = PERCENT TIME SPENT FOLLOWING; LOS = LEVEL OF SERVICE; SPEED IS MEASURED IN MILES PER HOUR (MPH); DENSITY IS MEASURED IN PASSENGER CARS PER HOUR PER LANE (PC/HR/LN);* ***BOLD****=EXCEEDS LOS STANDARD*

Freeway Operation

FREEWAY FACILITIES

For conditions under buildout of the General Plan, freeway delay was projected using the CCTA travel demand forecasting model. This average delay was used to calculate the congested travel time and compared against the free-flow travel time to calculate the delay index.

Under conditions with buildout of the General Plan to either the city limits or the Planning Area, the segment of northbound SR 4 within the city is projected to operate acceptably with a delay index of no more than 2.05, less than the acceptable threshold of 2.5.

A summary of freeway facility peak hour levels of service with General Plan buildout to the city limits is shown in Table 3.13-19. Freeway facility levels of service with General Plan buildout to the Planning Area are shown in Table 3.13-20.

TABLE 3.13-19: SUMMARY OF PM PEAK HOUR DELAY INDEX ON SR 4 – SR 160 TO LONE TREE WAY WITH GENERAL PLAN BUILDOUT TO CITY LIMITS

	EASTBOUND		*WESTBOUND*	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Average Speed	58.2 mph	48.8 mph	31.8 mph	60.9 mph
Free Flow Speed	65 mph	65 mph	65 mph	65 mph
Delay Index	1.12	1.33	2.05	1.07

TABLE 3.13-20: SUMMARY OF PM PEAK HOUR DELAY INDEX ON SR 4 – SR 160 TO LONE TREE WAY WITH GENERAL PLAN BUILDOUT TO PLANNING AREA

	EASTBOUND		*WESTBOUND*	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Average Speed	56.7 mph	49.8 mph	33.0 mph	59.8 mph
Free Flow Speed	65 mph	65 mph	65 mph	65 mph
Delay Index	1.15	1.30	1.97	1.09

Vehicle Miles Traveled

A common indicator used to quantify the amount of motor vehicle use in a specified area is Vehicle Miles Traveled, or VMT. VMT represents the total number of miles driven by persons traveling to and from a defined regional area, which for the purposes of this study is Brentwood. Many factors affect VMT, including the average distance residents commute to work, school, and shopping, as well as the proportion of trips that are made by non-automobile modes. Areas that have a diverse land use mix and ample facilities for non-automobile modes, including transit, tend to generate lower VMT than auto-oriented suburban areas.

Sophisticated travel demand models are needed to produce VMT estimates. The CCTA travel demand model operated by CCTA was utilized to estimate the changes in VMT resulting from buildout of the General Plan. It is projected that under buildout of the General Plan within city limits there would be approximately 255,701 daily trips with an average length of 9.24 miles per trip, for a total of 2.3 million miles traveled daily within Brentwood. The AM peak hour would be expected to experience approximately 19,700 trips, while there would be approximately 25,500 trips during the PM peak hour, as summarized in Table 3.13- 21.

TABLE 3.13- 21: SUMMARY OF VEHICLE MILES TRAVELED WITH GENERAL PLAN BUILDOUT TO CITY LIMITS

	DAILY	*AM PEAK HOUR*	*PM PEAK HOUR*
Vehicle Trips	255,701	19,763	25,570
Total VMT	2,363,242	213,273	236,324
Average VMT per trip	9.24	10.79	9.24

As summarized in Table 3.13- 22, buildout of the General Plan to the Planning Area would result in approximately 312,771 daily trips with an average trip length of 9.07 miles, for a total of 2.8 million miles traveled per day. The AM and PM peak hours would be expected to experience 22,800 and 31,277 trips per hour, respectively.

TABLE 3.13- 22: SUMMARY OF VEHICLE MILES TRAVELED WITH GENERAL PLAN BUILDOUT TO PLANNING AREA

	DAILY	*AM PEAK HOUR*	*PM PEAK HOUR*
Vehicle Trips	312,771	22,835	31,277
Total VMT	2,837,082	241,272	283,708
Average VMT per trip	9.07	10.57	9.07

IMPACTS AND MITIGATION MEASURES

Impact 3.13-1: Implementation of the proposed General Plan would result in acceptable traffic operation at the study intersections controlled by the City of Brentwood (less than significant)

Development allowed under the General Plan would result in increased use of the city's circulation system. Policy CIR 1-5 of the proposed General Plan establishes a threshold of LOS D or better, with an LOS E threshold within the boundaries of the Downtown Specific Plan. Action CIR 1b identifies the roadway improvements included in the General Plan to maintain the safety and efficiency of the city's roadway network at buildout. The General Plan also presents measures to reduce vehicle miles travelled and associated traffic effects through encouraging alternative modes of travel, including public transit, bicycle, and pedestrian modes. With respect to walking, bicycling, and transit modes, Actions CIR 2i and 2j specify that the City shall issue guidelines and incorporate assessment of multimodal levels of service as a routine component of transportation analyses.

As shown in Table 3.13-15 and Table 3.13-16, implementation of the General Plan would result in acceptable operation of LOS D or better at all study intersections. This would be a **less than significant impact**.

While no mitigation measures are necessary, the General Plan includes a set of policies and actions designed to ensure acceptable travel conditions on local roadways through adequately planning and funding roadway improvements. Applicable General Plan policies and actions will ensure that subsequent development projects address their project-level impacts, pay their proportional share of roadway improvements, and/or provide necessary off-site improvements. These policies and actions will ensure that impacts to the city's intersections and roadways remain less than significant.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy CIR 1-1: Ensure that the City's circulation network is maintained and improved over time to support buildout of the General Plan in a manner that is consistent with the General Plan Roadways Map.

Policy CIR 1-2: Ensure that the City's circulation network is a well-connected system of streets, roads, highways, sidewalks, and paths that effectively accommodates vehicular and non-vehicular traffic in a manner that considers the context of surrounding land uses and the needs of all roadway users.

Policy CIR 1-4: Maintain the Multimodal Transportation Service Objective (MTSO) standards set forth for designated regional transportation facilities that pass through Brentwood, as identified in the East County Action Plan for Routes of Regional Significance, produced by the TRANSPLAN Committee and Contra Costa Transportation Authority (CCTA).

Policy CIR 1-5: Maintain LOS D or better operation at intersections within Brentwood that are not on designated Routes of Regional Significance, and LOS E or better operation at intersections in the Downtown Specific Plan area.

Policy CIR 3-4: Provide an interconnected street network that provides multiple points of access, discouraging cut-through traffic while maintaining neighborhood connectivity.

Policy CIR 3-10: Require new development to include effective linkages to the surrounding circulation system for all modes of travel, to the extent feasible.

Policy CIR 4-1: Ensure that the rate of growth in Brentwood is consistent with the ability to provide adequate transportation services.

Policy CIR 4-2: Require new development to contribute its proportional cost of circulation improvements necessary to address cumulative transportation impacts on roadways throughout the city, as well as the bicycle and pedestrian network.

Policy CIR 4-3: Include capital projects sponsored by the City and necessary to maintain and improve traffic operations in the five-year Capital Improvement Program (CIP) that is annually reviewed by the City Council. Funding sources for such projects as well as intended project phasing will be generally identified in the CIP.

Policy CIR 4-4: Consider funding transportation projects intended to meet or maintain Level of Service standards, to implement the East County Action Plan for Routes of Regional Significance, and to provide mitigation for intersections subject to Findings of Special Circumstances through use of Local Road Improvement and Maintenance Funds allocated by the Contra Costa Transportation Authority. In no case will revenue from this source replace private developer funding for transportation projects determined to be required for new development to meet or maintain existing standards.

Policy CIR 4-5: Consider amendments to the City's General Plan, Zoning Ordinance, Capital Improvement Program, or other relevant documents to ensure that the East County Action Plan for Routes of Regional Significance is implemented and standards on non-regional routes are met.

ACTIONS

Action CIR 1a: The City shall cooperate with other jurisdictions in Contra Costa County to reduce transportation congestion through the following actions:

1. *Participate in the Contra Costa Transportation Authority's Growth Management and Congestion Management Programs.*
2. *Continue to serve on the TRANSPLAN Committee.*
3. *Encourage public input into the congestion management planning process.*
4. *Participate in future updates to the East County Action Plan for Routes of Regional Significance.*
5. *Cooperate with CCTA and other jurisdictions in planning for intersections subject to Findings of Special Circumstance.*
6. *Coordinate with neighboring agencies in efforts to expand regional bicycle, pedestrian, and equestrian networks to meet anticipated demands.*

Action CIR 1b: Complete the following roadway improvements to maintain the safety and efficiency of the current circulation system, and to support buildout of the General Plan.

1. *BUILDOUT TO CITY LIMITS*

a) Lone Tree Way/SR 4 South Ramps – Reallocate eastbound lanes to two through lanes and two right-turn lanes.

b) Lone Tree Way/O'Hara Avenue – Widen the westbound approach to include a shared through/right-turn lane. Modify the signal to include a right-turn overlap phase on the eastbound approach.

c) Lone Tree Way/Brentwood Boulevard – Modify signal to provide protected left-turns on the east and west legs. Eastbound: modify to provide left-turn, through, and right-turn lanes, and implement right-turn overlap signal phasing. Westbound: modify to provide a left-turn lane, through lane, and shared through/right-turn lane. Northbound: modify to provide dual left-turn, single through, and single through/right-turn lanes.

d) Brentwood Boulevard/Grant Street – Modify signal to protected left-turn movements on the east and west legs. Eastbound: modify to provide one left-turn lane and one shared through/right-turn lane. Westbound: widen to provide single left-turn, through, and right-turn lanes.

e) Sand Creek Road/Fairview Avenue – Widen the northbound approach to add a left-turn lane. Reconfigure the southbound approach to include left-turn, through, and shared through/right-turn lanes.

f) Fairview Avenue/San Jose Avenue – Reconfigure east and west approaches to include single left-turn and single through/right-turn lanes. Modify signal to protected left-turn phasing on the east and west legs.

g) Balfour Road/Brentwood Boulevard – Widen to provide an additional northbound left-turn lane and westbound right-turn lane.

h) Walnut Boulevard between Armstrong Road and Vasco Road – Widen to two lanes in each direction.

2. BUILDOUT TO THE PLANNING AREA (improvements in addition to those listed above)

a) Lone Tree Way/Fairview Avenue – Modify signal to provide protected left-turn phasing on the north and south legs.

b) Lone Tree Way/Brentwood Boulevard – Same improvements as identified above, plus widen the eastbound approach to include a second right-turn lane.

c) Brentwood Boulevard/Grant Street – same improvements as identified above, plus widen the westbound and southbound approaches to include dual left-turn lanes. Widen the northbound approach to add a right-turn lane. Widen Sunset Road east of the intersection to provide two eastbound lanes, approximately to McHenry Lane.

d) Sand Creek Road/SR 4 North – Add a second northbound right-turn lane.

e) Sand Creek Road/O'Hara Avenue – Modify signal to provide right-turn overlap phases on the eastbound and westbound approaches.

f) Balfour Road/Deer Valley Road – Signalize intersection and widen to provide a southbound left-turn pocket.

g) Balfour Road/American Avenue – Widen to provide a westbound right-turn lane.

h) Balfour Road/Fairview Avenue – Reconfigure northbound approach to include dual left-turn, single through, and shared through/right-turn lanes.

i) Balfour Road/Walnut Boulevard – Modify signal to provide an eastbound right-turn overlap phase.

j) Balfour Road/Brentwood Boulevard – Same improvements as identified above, plus widen the eastbound approach to provide two left-turn lanes, a through lane and a right-turn lane.

The City Traffic Engineer may substitute one or more of the improvements listed above with other improvements deemed to achieve acceptable operation.

<u>Action CIR 1d:</u> As part of the development review process, the Community Development Department and the Public Works Department shall review development projects to ensure that developers:

1. *Construct transportation improvements along property frontages when appropriate*
2. *Address the project's proportional-share of impacts to the City's circulation network through payment of traffic mitigation and other fees*

3. *Provide for complete streets to the extent feasible, facilitating walking, biking, and transit modes*
4. *Fund traffic impact studies that identify on-site and off-site project effects and mitigation measures*
5. *Provide adequate emergency vehicle access*

Action CIR 1e: Update the City's Capital Improvement Program (CIP) to include, as appropriate, the roadway improvements necessary to support buildout of the General Plan.

Action CIR 2j: Issue guidelines and incorporate assessment of multimodal LOS as a routine component of transportation impact analyses once the Public Works Department determines a multimodal LOS methodology that is deemed suitable for application in Brentwood.

Action CIR 3c: The Public Works Department shall review its adopted street standards and update them as necessary to achieve balanced roadway configurations that serve all users, and through design help to reinforce appropriate vehicle speeds for the surrounding land use context.

Action CIR 4a: Maintain and routinely update the City's Development Fee Program to cover the cost of mitigating development's share of improvements on non-regional and regional routes, as well as the cost of maintaining Brentwood's identified service and/or performance standards.

Action CIR 4b: As part of the development review process, require new development to mitigate circulation impacts by making improvements to the motorized and non-motorized circulation networks as necessary, and in a proportional manner with an established nexus between the level of impact and required improvements and/or contributions.

Action CIR 4c: Implement specified local actions for the City of Brentwood as identified in the East County Action Plan for Routes of Regional Significance in a timely manner.

Impact 3.13-2: Implementation of the proposed General Plan would result in acceptable traffic operation on facilities designated by CCTA to be Routes of Regional Significance (less than significant)

Development allowed under the General Plan would result in increased traffic on Routes of Regional Significance. Specific intersection and roadway-level improvements included as part of the General Plan are identified in Table 3.13-14. Other planned regional circulation improvements, including projects identified in the CCTA Congestion Management Plan and City of Brentwood Capital Improvement Program, are identified in Table 3.13-8. These combined improvements are projected to be sufficient to accommodate the additional traffic associated with buildout of the General Plan, meeting or exceeding the Multimodal Transportation Service Objective (MTSO) of LOS D that is applied to intersections on signalized suburban arterial routes and to non-signalized rural roads by CCTA in the *East County Action Plan for Routes of Regional Significance*. The

projected future traffic operation on the SR 4 freeway segment would also meet the required Delay Index MTSO, with the projected freeway delay index ranging between 1.07 and 2.05 (depending on direction and peak hour), remaining within the maximum limit of 2.5.

Level of service calculations for buildout of the General Plan to the current city limits and to the Planning Area are shown in Table 3.13-15 and 3.13-13 for intersections, and in Tables 3.13-14 and 3.13-15 for Roadway Segments. The Delay Index results for the SR 4 freeway segment are summarized in Tables 3.13-16 and 3.13-17. All results would fall within specified MTSO levels. This would be a **less than significant impact**.

While no mitigation measures are necessary, the General Plan includes a set of policies and actions designed to ensure acceptable travel conditions on Routes of Regional Significance. General Plan Policy CIR 1-4 requires the City to comply with MTSO standards set forth by CCTA and the *East County Action Plan for Routes of Regional Significance*, and Action CIR 1a requires the City to work with CCTA and other jurisdictions in Contra Costa county to address regional circulation needs. Action CIR 1b identifies intersection and roadway improvements that are needed to maintain the safety and efficiency of the roadway network at buildout of the General Plan, including improvements on facilities owned by jurisdictions other than the City of Brentwood.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy CIR 1-1: Ensure that the City's circulation network is maintained and improved over time to support buildout of the General Plan in a manner that is consistent with the General Plan Roadways Map.

Policy CIR 1-4: Maintain the Multimodal Transportation Service Objective (MTSO) standards set forth for designated regional transportation facilities that pass through Brentwood, as identified in the East County Action Plan for Routes of Regional Significance, produced by the TRANSPLAN Committee and Contra Costa Transportation Authority (CCTA).

- *Following are the Routes of Regional Significance identified within and surrounding Brentwood by the East County Action Plan for Routes of Regional Significance.*
  - *State Route (SR) 4*
  - *Balfour Road*
  - *Brentwood Boulevard*
  - *Deer Valley Road*
  - *Fairview Avenue*
  - *Sand Creek Road*
  - *Lone Tree Way*
  - *Oak St-Walnut Blvd*
  - *Marsh Creek Road*
  - *Vasco Road*
- *Freeway MTSO – The Delay Index should not exceed 2.5 during the peak hour. This applies to SR 4 freeway segments.*

- *Signalized Suburban Arterial Routes – Intersection levels of service should be maintained at LOS D or better.*
- *Non-Signalized Rural Roads – Roadway levels of service should be maintained at LOS D or better.*

Policy CIR 1-18: Consider the impacts of growth in surrounding jurisdictions when designing Brentwood's circulation network, and in particular, the impacts created on the Sellers Avenue corridor by growth in Oakley.

Policy CIR 1-19: Participate in regional planning efforts for the future SR 239 highway corridor between Brentwood and Interstates 580/205 in Tracy, recognizing that the importance of the route may increase over time as patterns in regional employment and commerce change.

Policy CIR 4-3: Include capital projects sponsored by the City and necessary to maintain and improve traffic operations in the five-year Capital Improvement Program (CIP) that is annually reviewed by the City Council. Funding sources for such projects as well as intended project phasing will be generally identified in the CIP.

Policy CIR 4-4: Consider funding transportation projects intended to meet or maintain Level of Service standards, to implement the East County Action Plan for Routes of Regional Significance, and to provide mitigation for intersections subject to Findings of Special Circumstances through use of Local Road Improvement and Maintenance Funds allocated by the Contra Costa Transportation Authority. In no case will revenue from this source replace private developer funding for transportation projects determined to be required for new development to meet or maintain existing standards.

Policy CIR 4-5: Consider amendments to the City's General Plan, Zoning Ordinance, Capital Improvement Program, or other relevant documents to ensure that the East County Action Plan for Routes of Regional Significance is implemented and standards on non-regional routes are met.

ACTIONS

Action CIR 1a: The City shall cooperate with other jurisdictions in Contra Costa County to reduce transportation congestion through the following actions:

1. *Participate in the Contra Costa Transportation Authority's Growth Management and Congestion Management Programs*
2. *Continue to serve on the TRANSPLAN Committee*
3. *Encourage public input into the congestion management planning process*
4. *Participate in future updates to the East County Action Plan for Routes of Regional Significance*

5. *Cooperate with CCTA and other jurisdictions in planning for intersections subject to Findings of Special Circumstance*
6. *Coordinate with neighboring agencies in efforts to expand regional bicycle, pedestrian, and equestrian networks to meet anticipated demands*

<u>Action CIR 1b:</u> Complete the following roadway improvements to maintain the safety and efficiency of the current circulation system, and to support buildout of the General Plan.

1. *BUILDOUT TO CITY LIMITS*

   a) Lone Tree Way/SR 4 South Ramps – Reallocate eastbound lanes to two through lanes and two right-turn lanes.

   b) Lone Tree Way/O'Hara Avenue – Widen the westbound approach to include a shared through/right-turn lane. Modify the signal to include a right-turn overlap phase on the eastbound approach.

   c) Lone Tree Way/Brentwood Boulevard – Modify signal to provide protected left-turns on the east and west legs. Eastbound: modify to provide left-turn, through, and right-turn lanes, and implement right-turn overlap signal phasing. Westbound: modify to provide a left-turn lane, through lane, and shared through/right-turn lane. Northbound: modify to provide dual left-turn, single through, and single through/right-turn lanes.

   d) Brentwood Boulevard/Grant Street – Modify signal to protected left-turn movements on the east and west legs. Eastbound: modify to provide one left-turn lane and one shared through/right-turn lane. Westbound: widen to provide single left-turn, through, and right-turn lanes.

   e) Sand Creek Road/Fairview Avenue – Widen the northbound approach to add a left-turn lane. Reconfigure the southbound approach to include left-turn, through, and shared through/right-turn lanes.

   f) Fairview Avenue/San Jose Avenue – Reconfigure east and west approaches to include single left-turn and single through/right-turn lanes. Modify signal to protected left-turn phasing on the east and west legs.

   g) Balfour Road/Brentwood Boulevard – Widen to provide an additional northbound left-turn lane and westbound right-turn lane.

   h) Walnut Boulevard between Armstrong Road and Vasco Road – Widen to two lanes in each direction.

2. *BUILDOUT TO THE PLANNING AREA (improvements in addition to those listed above)*

   a) Lone Tree Way/Fairview Avenue – Modify signal to provide protected left-turn phasing on the north and south legs.

   b) Lone Tree Way/Brentwood Boulevard – Same improvements as identified above, plus widen the eastbound approach to include a second right-turn lane.

c) Brentwood Boulevard/Grant Street – same improvements as identified above, plus widen the westbound and southbound approaches to include dual left-turn lanes. Widen the northbound approach to add a right-turn lane. Widen Sunset Road east of the intersection to provide two eastbound lanes, approximately to McHenry Lane.

d) Sand Creek Road/SR 4 North – Add a second northbound right-turn lane.

e) Sand Creek Road/O'Hara Avenue – Modify signal to provide right-turn overlap phases on the eastbound and westbound approaches.

f) Balfour Road/Deer Valley Road – Signalize intersection and widen to provide a southbound left-turn pocket.

g) Balfour Road/American Avenue – Widen to provide a westbound right-turn lane.

h) Balfour Road/Fairview Avenue – Reconfigure northbound approach to include dual left-turn, single through, and shared through/right-turn lanes.

i) Balfour Road/Walnut Boulevard – Modify signal to provide an eastbound right-turn overlap phase.

j) Balfour Road/Brentwood Boulevard – Same improvements as identified above, plus widen the eastbound approach to provide two left-turn lanes, a through lane and a right-turn lane.

The City Traffic Engineer may substitute one or more of the improvements listed above with other improvements deemed to achieve acceptable operation.

Action CIR 1e: Update the City's Capital Improvement Program (CIP) to include, as appropriate, the roadway improvements necessary to support buildout of the General Plan.

Action CIR 1f: Routinely monitor the performance of the circulation network, optimizing traffic signals and utilizing Intelligent Transportation Systems (ITS) measures where beneficial to maximize efficiency of the existing network on a regular basis.

Action CIR 1g: Provide staff support to regional agencies such as CCTA and Caltrans in the implementation of ITS measures that improve the efficiency of roadway and transit networks in east Contra Costa County.

Action CIR 1i: Continually seek opportunities to fund maintenance of and improvements to the circulation network, including the active pursuit by the Public Works Department of a wide range of grant sources overseen by MTC and other agencies.

Action CIR 4a: Maintain and routinely update the City's Development Fee Program to cover the cost of mitigating development's share of improvements on non-regional and regional routes, as well as the cost of maintaining Brentwood's identified service and/or performance standards.

Action CIR 4c: Implement specified local actions for the City of Brentwood as identified in the East County Action Plan for Routes of Regional Significance in a timely manner.

Action CIR 4d: Participate in the Contra Costa Transportation Authority's conflict resolution process as needed to resolve disputes related to the implementation of the East County Action Plan for Routes of Regional Significance.

Impact 3.13-3: The proposed General Plan would result in no changes to air traffic patterns (no impact)

The nearest air facility to Brentwood is Byron Airport, located approximately eight miles to the southeast. Brentwood itself has no existing or planned airport facilities, and potential development within the Planning Area would have no effect on the Byron Airport approach or departure zones. Development attributable to the General Plan would be expected to have **no impact** to air traffic.

Impact 3.13-4: Implementation of the proposed General Plan would not substantially increase hazards due to a design feature (less than significant)

Brentwood maintains improvement standards that guide the construction of new transportation facilities to minimize design hazards for all users of the system. Through the environmental review process, land use proposals that would add traffic to streets not designed to current standards are carefully evaluated. If needed, mitigation measures are identified and the project is conditioned to construct or provide funding for an improvement that would minimize or eliminate the hazard. Typical improvements include shoulder widening, adding turn pockets, adding sidewalks or crosswalks, realigning sharp curves, prohibiting certain turning movements, and signalizing intersections, among other options. New and upgraded roadways needed to accommodate new development will be designed according to applicable Federal, State, and local design standards.

Development and infrastructure projects in Brentwood would be required to comply with the General Plan, Municipal Code, and applicable State and local regulations. The General Plan also establishes several policies and actions that are intended to result in roadway designs that safely accommodate all users and reinforce lower driving speeds where appropriate to enhance safety. Specifically, General Plan Policy CIR 3-6 requires that the City's street standards reflect a multi-modal focus and CIR 3-9 indicates that intersections shall be designed to provide safe access for all users. Action CIR 1h requires the City to monitor collision reports annually and prioritize areas to implement safety improvements; Action CIR 2b indicates that signalized intersections shall be designed to provide necessary pedestrian crossing times; and Action CIR 3c requires the Public Works Department to establish street standards that balance the needs of all users. Further, the

General Plan does not contain any provisions that would increase hazards due to design features of incompatible uses. Therefore, this impact is **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy CIR 1-9: Provide high quality regular maintenance for existing and future transportation facilities including streets, sidewalks, and paths.

Policy CIR 1-10: Maximize the use of matching funding grant sources to provide ongoing maintenance, operation, and management of the City's circulation network.

Policy CIR 1-11: Consider roundabouts in lieu of traffic signals where appropriate conditions exist to maximize intersection efficiency, maintain continuous but moderate traffic flow, reduce accident severity, and enhance pedestrian and cyclist circulation.

Policy CIR 1-14: Work with the California Public Utilities Commission (CPUC) in evaluating the potential to create additional grade separated roadway crossings on the Union Pacific Railroad (UPRR) line through Brentwood.

Policy CIR 2-2: Routinely incorporate sidewalks and enhanced pedestrian crossing facilities as part of new street construction, and incorporate bicycle facilities on new collector and arterial streets (including bicycle lanes where appropriate, bicycle route and destination signs, and bicycle detection at signals).

Policy CIR 2-4: Create an accessible circulation network that is consistent with guidelines established by the Americans with Disabilities Act (ADA), allowing mobility-impaired users such as the disabled and elderly to safely and effectively travel within and beyond the city.

Policy CIR 2-10: Work with utility providers to reduce or eliminate barriers to pedestrian and bicyclist mobility created by utility infrastructure (such as utility poles that obstruct accessibility).

Policy CIR 2-11: Design safe crossings where trails and roads meet.

Policy CIR 3-6: Ensure that the City's adopted street standards reflect a multi-modal focus, including vehicular lane widths that are no wider than necessary to serve the surrounding land use context and accommodate emergency vehicles.

Policy CIR 3-9: Design intersections to provide adequate and safe access for all users including pedestrians, bicyclists, and motorists of all ages and abilities.

Policy CIR 4-3: Include capital projects sponsored by the City and necessary to maintain and improve traffic operations in the five-year Capital Improvement Program (CIP) that is annually

reviewed by the City Council. Funding sources for such projects as well as intended project phasing will be generally identified in the CIP.

ACTIONS

Action CIR 1a: The City shall cooperate with other jurisdictions in Contra Costa County to reduce transportation congestion through the following actions:

1. *Participate in the Contra Costa Transportation Authority's Growth Management and Congestion Management Programs*
2. *Continue to serve on the TRANSPLAN Committee*
3. *Encourage public input into the congestion management planning process*
4. *Participate in future updates to the East County Action Plan for Routes of Regional Significance*
5. *Cooperate with CCTA and other jurisdictions in planning for intersections subject to Findings of Special Circumstance*
6. *Coordinate with neighboring agencies in efforts to expand regional bicycle, pedestrian, and equestrian networks to meet anticipated demands*

Action CIR 1c: The Public Works Department shall maintain a systematic pavement management program and identify and prioritize maintenance projects in the City's CIP.

1. *Street maintenance should include upkeep and regular cleaning of bicycle routes to remove debris and repair poor pavement conditions that discourage bicycle riding*
2. *The Pavement Management Program data system should address signage and pavement quality throughout the city*

Action CIR 1d: As part of the development review process, the Community Development Department and the Public Works Department shall review development projects to ensure that developers:

1. *Construct transportation improvements along property frontages when appropriate.*
2. *Address the project's proportional share of impacts to the City's circulation network through payment of traffic mitigation and other fees.*
3. *For local project-related circulation impacts requiring improvements that are not included in an adopted impact fee program, either complete the necessary improvements or pay a proportional-share of the cost.*
4. *Provide for complete streets to the extent feasible, facilitating walking, biking, and transit modes.*
5. *Fund traffic impact studies that identify on-site and off-site project effects and mitigation measures.*
6. *Provide adequate emergency vehicle access.*

Action CIR 1h: Ensure regular monitoring of traffic accidents, traffic levels, and intersection capacity to update base data and respond to safety problems and changing conditions. Prioritize locations with high collision rates for safety improvements.

Action CIR 1i: Continually seek opportunities to fund maintenance of and improvements to the circulation network, including the active pursuit by the Public Works Department of a wide range of grant sources overseen by MTC and other agencies.

Action CIR 2b: Review traffic signal timing plans to ensure adequate crossing times for all users at signalized intersections.

Action CIR 2c: Review all transportation improvements to ensure installation in accordance with current accessibility standards.

Action CIR 3b: The Public Works Department shall review plans for new or modified intersections to ensure that the number of vehicle lanes is limited where possible to provide for moderate speeds and pedestrian and bicyclist safety, and that curb extensions are installed where appropriate to reduce driving speeds and shorten pedestrian crossing distances.

Action CIR 3c: The Public Works Department shall review its adopted street standards and update them as necessary to achieve balanced roadway configurations that serve all users, and through design help to reinforce appropriate vehicle speeds for the surrounding land use context.

Impact 3.13-5: General Plan implementation would not result in impacts related to emergency access (Less than Significant)

Implementation of the proposed General Plan would result in increased development densities and intensities, would result in new roadways, and would increase the number of users on the city's transportation system. There will be a need to ensure that adequate emergency access provisions are made to accommodate increased population and growth. As shown in Tables 3.13-12 and 3.13-13, implementation of the General Plan is projected to result in LOS D or better operation at all study intersections. Further, as shown in Tables 3.13-14 and 3.13-15, Routes of Regional Significance in the Brentwood area are also projected to operate at LOS D or better, and are not expected to operate with levels of congestion that would impede emergency access. In addition to maintaining traffic flows that facilitate emergency response, General Plan Policy CIR 1-12 requires that the City maintain and improve critical transportation facilities for emergency vehicle access and emergency evacuation needs and Policy CIR 3-4 requires an interconnected street network which improves emergency response by providing multiple points of access and alternative travel routes. Policy CIR 3-6 also indicates that streets shall be designed to accommodate emergency vehicles. Action CIR 1d requires all new developments to provide

adequate emergency vehicle access. As a result, the General Plan's impacts to emergency circulation and access are considered to be **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy CIR 1-12: Maintain and improve critical transportation facilities for emergency vehicle access and emergency evacuation needs.

Policy CIR 3-4: Provide an interconnected street network that provides multiple points of access, discouraging cut-through traffic while maintaining neighborhood connectivity.

Policy CIR 3-6: Ensure that the City's adopted street standards reflect a multi-modal focus, including vehicular lane widths that are no wider than necessary to serve the surrounding land use context and accommodate emergency vehicles.

ACTIONS

Action CIR 1d: As part of the development review process, the Community Development Department and the Public Works Department shall review development projects to ensure that developers:

1. *Construct transportation improvements along property frontages when appropriate.*
2. *Address the project's proportional share of impacts to the City's circulation network through payment of traffic mitigation and other fees.*
3. *For local project-related circulation impacts requiring improvements that are not included in an adopted impact fee program, either complete the necessary improvements or pay a proportional-share of the cost.*
4. *Provide for complete streets to the extent feasible, facilitating walking, biking, and transit modes.*
5. *Fund traffic impact studies that identify on-site and off-site project effects and mitigation measures.*
6. *Provide adequate emergency vehicle access.*

Action CIR 3a: During the development review process, the Community Development Department shall review plans to ensure that projects include an interconnected network of streets and paths that facilitate non-auto modes for shorter trips, and disperse rather than concentrate traffic in residential neighborhoods.

Impact 3.13-6: The proposed General Plan would accommodate increased demand for public transit and supports a shift in trips from automobile to transit modes (Less than Significant)

Implementation of the General Plan could lead to increases in the city's population and employment that would increase the demand for transit services offered by Tri Delta Transit. While there are no established standards regarding transit levels of service that have been adopted by the City or transit agencies, the General Plan includes policies that support transit-oriented development patterns, strengthen ties between the pedestrian and bicycle networks to transit, promote enhancements to transit facilities, and support increased transit coverage and frequencies in Brentwood.

Policies CIR 1-4 and CIR 1-5 establish acceptable level of service thresholds for intersections within Brentwood, thereby establishing an acceptable level of congestion for all vehicles, including transit vehicles. Policy CIR 2-13 indicates that the City shall continue to coordinate with Tri Delta Transit to increase the coverage areas and frequency of bus service in Brentwood; Policy CIR 2-14 emphasizes seeking opportunities to fund access improvements for future mass transit facilities such as eBART; and Policies CIR 2-17, 2-18, and 2-19 focus on improving park-and-ride facilities at major transit stops and working to identify locations for additional park-and-ride lots. Action CIR 2g requires the City to coordinate with Tri Delta Transit to increase transit service frequency and hours of operation along major corridors and to establish service in areas of Brentwood that currently lack public transit service. Given the General Plan's emphasis on increasing transit usage, improving transit facilities, and commitment to funding future improvements to transit service, any potential impacts to transit are considered **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy CIR 1-3: When analyzing impacts to the circulation network created by new development or roadway improvements, consider the needs of all users, including those with disabilities, ensuring that pedestrians, bicyclists, and transit riders are considered at an equal level to automobile drivers.

Policy CIR 1-16: Work with major employers and higher-education institutions to implement Transportation Demand Management (TDM) programs.

Policy CIR 2-8: Provide secure bicycle racks in places such as the Downtown, at commercial areas, park and ride transit facilities, schools, multiple unit residential developments, and other locations where there is a concentration of residents, visitors, students, or employees.

Policy CIR 2-12: Seek opportunities to fund and construct improvements that improve multimodal access to any future mass transit facility (i.e., eBART).

Policy CIR 2-13: Coordinate with Tri Delta Transit to increase the coverage areas and frequencies of bus service in Brentwood.

Policy CIR 2-14: Ensure that effective linkages are in place between any future mass transit facility (i.e., eBART) and the city's primary activity and employment centers.

Policy CIR 2-15: Coordinate with Tri Delta Transit to maintain existing and, where feasible, build new lighted and sheltered seating facilities at bus stops.

Policy CIR 2-16: Ensure that adequate lighting and trash disposal is provided at all bus stops.

Policy CIR 2-17: Encourage the use of park-and-ride lots and other transit incentives for Brentwood commuters.

Policy CIR 2-18: Work with Tri Delta Transit to identify the need for and locations of additional park-and-ride lots in Brentwood in order to increase the number and length of trips made by transit and carpooling.

Policy CIR 2-19: Provide safe and continuous pedestrian, vehicular, and bicycle access at all transit park-and-ride facilities.

Policy CIR 3-2: Prioritize high-density and mixed land use patterns that promote transit and pedestrian travel along transit corridors.

Policy CIR 3-3: Design developments to include features that encourage walking, bicycling, and transit use. Design features shall include bus turnouts, transit shelters and benches, and pedestrian access points between subdivisions and between adjacent related land uses.

ACTIONS

Action CIR 1d: As part of the development review process, the Community Development Department and the Public Works Department shall review development projects to ensure that developers:

1. *Construct transportation improvements along property frontages when appropriate.*
2. *Address the project's proportional share of impacts to the City's circulation network through payment of traffic mitigation and other fees.*
3. *For local project-related circulation impacts requiring improvements that are not included in an adopted impact fee program, either complete the necessary improvements or pay a proportional-share of the cost.*

4. *Provide for complete streets to the extent feasible, facilitating walking, biking, and transit modes.*
5. *Fund traffic impact studies that identify on-site and off-site project effects and mitigation measures.*
6. *Provide adequate emergency vehicle access.*

Action CIR 1g: Provide staff support to regional agencies such as CCTA and Caltrans in the implementation of ITS measures that improve the efficiency of roadway and transit networks in east Contra Costa County.

Action CIR 2g: Assist and coordinate with Tri Delta Transit in seeking funding to increase transit frequencies on key corridors, increase the hours of transit operation, and expand regular transit service in portions of Brentwood that have no public transit service.

1. *New or modified routes that connect the Downtown area with major employment centers and Los Medanos College should be prioritized.*
2. *New or modified routes connecting residential and employment-based uses to any future mass transit facility (i.e., eBART) should be coordinated to initiate with implementation of rail service.*

Action CIR 2i: Monitor national efforts to establish effective multimodal level of service standards for pedestrian, bicycle, and transit modes.

Action CIR 2j: Issue guidelines and incorporate assessment of multimodal LOS as a routine component of transportation impact analyses once the Public Works Department determines a multimodal LOS methodology that is deemed suitable for application in Brentwood.

Impact 3.13-7: The proposed General Plan is consistent with adopted bicycle and pedestrian plans, and supports enhancements that emphasize bicycle and pedestrian circulation (Less than Significant)

Implementation of the General Plan would improve the existing bicycle and pedestrian circulation infrastructure and require future development to provide multimodal circulation improvements. Increases in the city's population and employment that could result under implementation of the General Plan would also likely lead to increases in pedestrian and bicycle travel beyond current levels.

Policy CIR 1-2 indicates that the City shall establish and maintain a circulation network that accommodates both vehicular and non-vehicular modes of transportation, and Policy CIR 2-1 requires the City to establish and maintain a bicycle and pedestrian network that is consistent with the Countywide Bicycle and Pedestrian Plan. Policies CIR 2-3 and CIR 3-3, as well as Action CIR 3a, require development projects to construct pedestrian and bicycle improvements that encourage

walking, bicycling, and transit use and are consistent with the Countywide Bicycle and Pedestrian Plan. Given the proposed General Plan's focus on enhancing Brentwood's multimodal circulation system, consistency with the Countywide Bicycle and Pedestrian Plan, requirements for future development to construct multimodal improvements, and commitment to fund larger bicycle and pedestrian improvement projects through impact fees, the potential impacts to pedestrian and bicycle circulation are considered to be **less than significant**.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy CIR 1-2: Ensure that the City's circulation network is a well-connected system of streets, roads, highways, sidewalks, and paths that effectively accommodates vehicular and non-vehicular traffic in a manner that considers the context of surrounding land uses and the needs of all roadway users.

Policy CIR 1-3: When analyzing impacts to the circulation network created by new development or roadway improvements, consider the needs of all users, including those with disabilities, ensuring that pedestrians, bicyclists, and transit riders are considered at an equal level to automobile drivers.

Policy CIR 1-8: Consider all transportation improvements as opportunities to improve safety, access, and mobility for all roadway users.

Policy CIR 1-9: Provide high quality regular maintenance for existing and future transportation facilities including streets, sidewalks, and paths.

Policy CIR 2-1: Establish and maintain a system of interconnected bicycle, pedestrian, and equestrian facilities that facilitate commuter and recreational travel, and that are consistent with the City's parks, trails, and recreation goals and policies in this General Plan and the Contra Costa County Countywide Bicycle and Pedestrian Plan.

Policy CIR 2-2: Routinely incorporate sidewalks and enhanced pedestrian crossing facilities as part of new street construction, and incorporate bicycle facilities on new collector and arterial streets (including bicycle lanes where appropriate, bicycle route and destination signs, and bicycle detection at signals).

Policy CIR 2-3: Require development projects to construct on-site sidewalks, paths, and trails in a manner that is consistent with the City's parks, trails, and recreation goals and policies in this General Plan and the Contra Costa County Countywide Bicycle and Pedestrian Plan, and as dictated by the location of transit stops and common pedestrian destinations.

Policy CIR 2-4: Create an accessible circulation network that is consistent with guidelines established by the Americans with Disabilities Act (ADA), allowing mobility-impaired users such as the disabled and elderly to safely and effectively travel within and beyond the city.

Policy CIR 2-6: Prioritize bicycle and pedestrian safety for students traveling to and from school.

Policy CIR 2-7: Support regional efforts to develop Safe Routes to School Programs for schools that serve Brentwood's population.

Policy CIR 2-8: Provide secure bicycle racks in places such as the Downtown, at commercial areas, park and ride transit facilities, schools, multiple unit residential developments, and other locations where there is a concentration of residents, visitors, students, or employees.

Policy CIR 2-9: Where possible, integrate multi-use path facilities into utility corridor rights-of-way.

Policy CIR 2-10: Work with utility providers to reduce or eliminate barriers to pedestrian and bicyclist mobility created by utility infrastructure (such as utility poles that obstruct accessibility).

Policy CIR 2-11: Design safe crossings where trails and roads meet.

Policy CIR 2-12: Seek opportunities to fund and construct improvements that improve multimodal access to any future mass transit facility (i.e., eBART).

Policy CIR 2-14: Ensure that effective linkages are in place between any future mass transit facility (i.e., eBART) and the city's primary activity and employment centers.

Policy CIR 2-19: Provide safe and continuous pedestrian, vehicular, and bicycle access at all transit park-and-ride facilities.

Policy CIR 3-1: Recognize the role of streets not only as vehicle routes but also as parts of a system of public spaces, with quality landscaping, street trees, and bicycle and pedestrian paths.

Policy CIR 3-2: Prioritize high-density and mixed land use patterns that promote transit and pedestrian travel along transit corridors.

Policy CIR 3-3: Design developments to include features that encourage walking, bicycling, and transit use. Design features shall include bus turnouts, transit shelters and benches, and pedestrian access points between subdivisions and between adjacent related land uses.

Policy CIR 3-6: Ensure that the City's adopted street standards reflect a multi-modal focus, including vehicular lane widths that are no wider than necessary to serve the surrounding land use context and accommodate emergency vehicles.

Policy CIR 3-9: Design intersections to provide adequate and safe access for all users including pedestrians, bicyclists, and motorists of all ages and abilities.

Policy CIR 3-10: Require new development to include effective linkages to the surrounding circulation system for all modes of travel, to the extent feasible.

Policy CIR 4-2: Require new development to contribute its proportional cost of circulation improvements necessary to address cumulative transportation impacts on roadways throughout the city, as well as the bicycle and pedestrian network.

ACTIONS

Action CIR 1c: The Public Works Department shall maintain a systematic pavement management program and identify and prioritize maintenance projects in the City's CIP.

1. *Street maintenance should include upkeep and regular cleaning of bicycle routes to remove debris and repair poor pavement conditions that discourage bicycle riding.*
2. *The Pavement Management Program data system should address signage and pavement quality throughout the city.*

Action CIR 1d: As part of the development review process, the Community Development Department and the Public Works Department shall review development projects to ensure that developers:

1. *Construct transportation improvements along property frontages when appropriate.*
2. *Address the project's proportional share of impacts to the City's circulation network through payment of traffic mitigation and other fees.*
3. *For local project-related circulation impacts requiring improvements that are not included in an adopted impact fee program, either complete the necessary improvements or pay a proportional-share of the cost.*
4. *Provide for complete streets to the extent feasible, facilitating walking, biking, and transit modes.*
5. *Fund traffic impact studies that identify on-site and off-site project effects and mitigation measures.*
6. *Provide adequate emergency vehicle access.*

Action CIR 1i: Continually seek opportunities to fund maintenance of and improvements to the circulation network, including the active pursuit by the Public Works Department of a wide range of grant sources overseen by MTC and other agencies.

Action CIR 2a: Review development applications to ensure compliance with the parks, trails, and recreation goals and policies in this General Plan and the Countywide Bicycle and Pedestrian Plan.

Action CIR 2b: Review traffic signal timing plans to ensure adequate crossing times for all users at signalized intersections.

Action CIR 2c: Review all transportation improvements to ensure installation in accordance with current accessibility standards.

Action CIR 2e: Continue to include construction of bicycle and pathway facilities in the City's Capital Improvement Program, prioritizing areas where gaps in the current network need to be filled.

Action CIR 2f: Ensure that bicycle loop detectors are present at traffic signals and clearly identified with stencils.

Action CIR 2h: Coordinate with the Contra Costa Transportation Authority, Contra Costa Health Services, Brentwood Union School District, and Liberty Union High School District to initiate development of Safe Routes to School Programs in Brentwood.

Action CIR 2i: Monitor national efforts to establish effective multimodal level of service standards for pedestrian, bicycle, and transit modes.

Action CIR 2j: Issue guidelines and incorporate assessment of multimodal LOS as a routine component of transportation impact analyses once the Public Works Department determines a multimodal LOS methodology that is deemed suitable for application in Brentwood.

Action CIR 3a: During the development review process, the Community Development Department shall review plans to ensure that projects include an interconnected network of streets and paths that facilitate non-auto modes for shorter trips, and disperse rather than concentrate traffic in residential neighborhoods.

Action CIR 3b: The Public Works Department shall review plans for new or modified intersections to ensure that the number of vehicle lanes is limited where possible to provide for moderate speeds and pedestrian and bicyclist safety, and that curb extensions are installed where appropriate to reduce driving speeds and shorten pedestrian crossing distances.

Action CIR 3c: The Public Works Department shall review its adopted street standards and update them as necessary to achieve balanced roadway configurations that serve all users, and through design help to reinforce appropriate vehicle speeds for the surrounding land use context.

Action CIR 4b: As part of the development review process, require new development to mitigate circulation impacts by making improvements to the motorized and non-motorized circulation networks as necessary, and in a proportional manner with an established nexus between the level of impact and required improvements and/or contributions.

Brentwood General Plan Update

Figure 3.13-1
CCTA Routes of Regional Significance

East County Regional Routes

- Designated Route of Regional Significance
- Proposed Route of Regional Significance
- Future Route of Regional Significance (Planned/Under Construction - upon completion of construction these become designated regional routes)
- Other Local Route

Source: East County Action Plan for Routes of Regional Significance, CCTA, 2009

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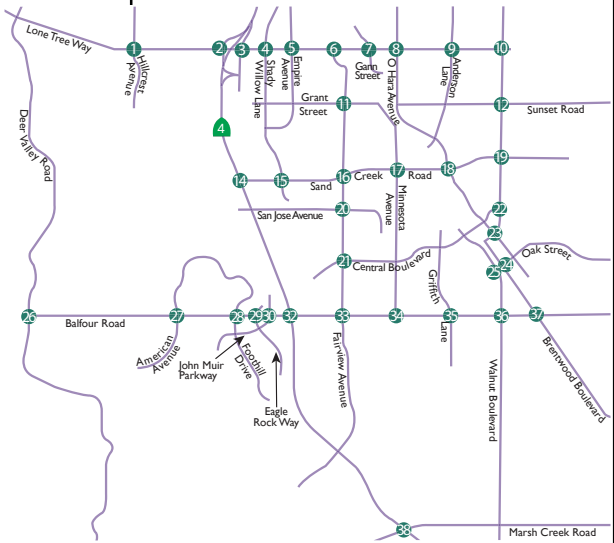
Brentwood General Plan Update

Figure 3.13-2A
Existing Circulation Network and Lane Configurations



● Study Intersection

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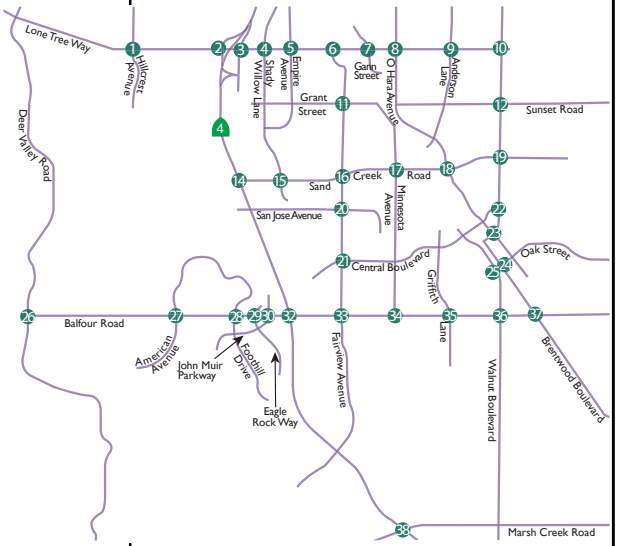

Brentwood General Plan Update

Figure 3.13-2B
Existing Circulation Network and Lane Configurations

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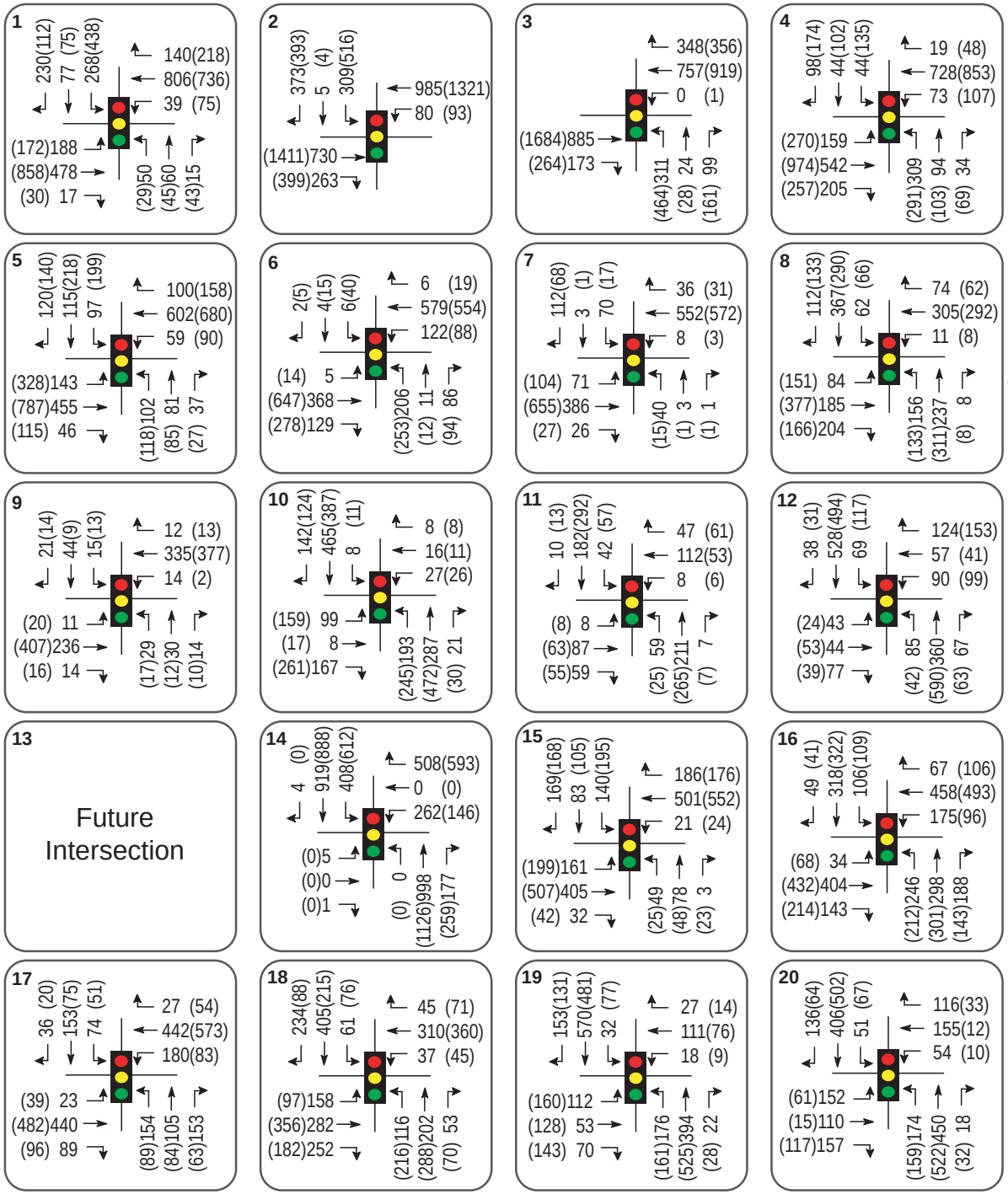
Brentwood General Plan Update

Figure 3.13-3A
Existing Traffic Volumes



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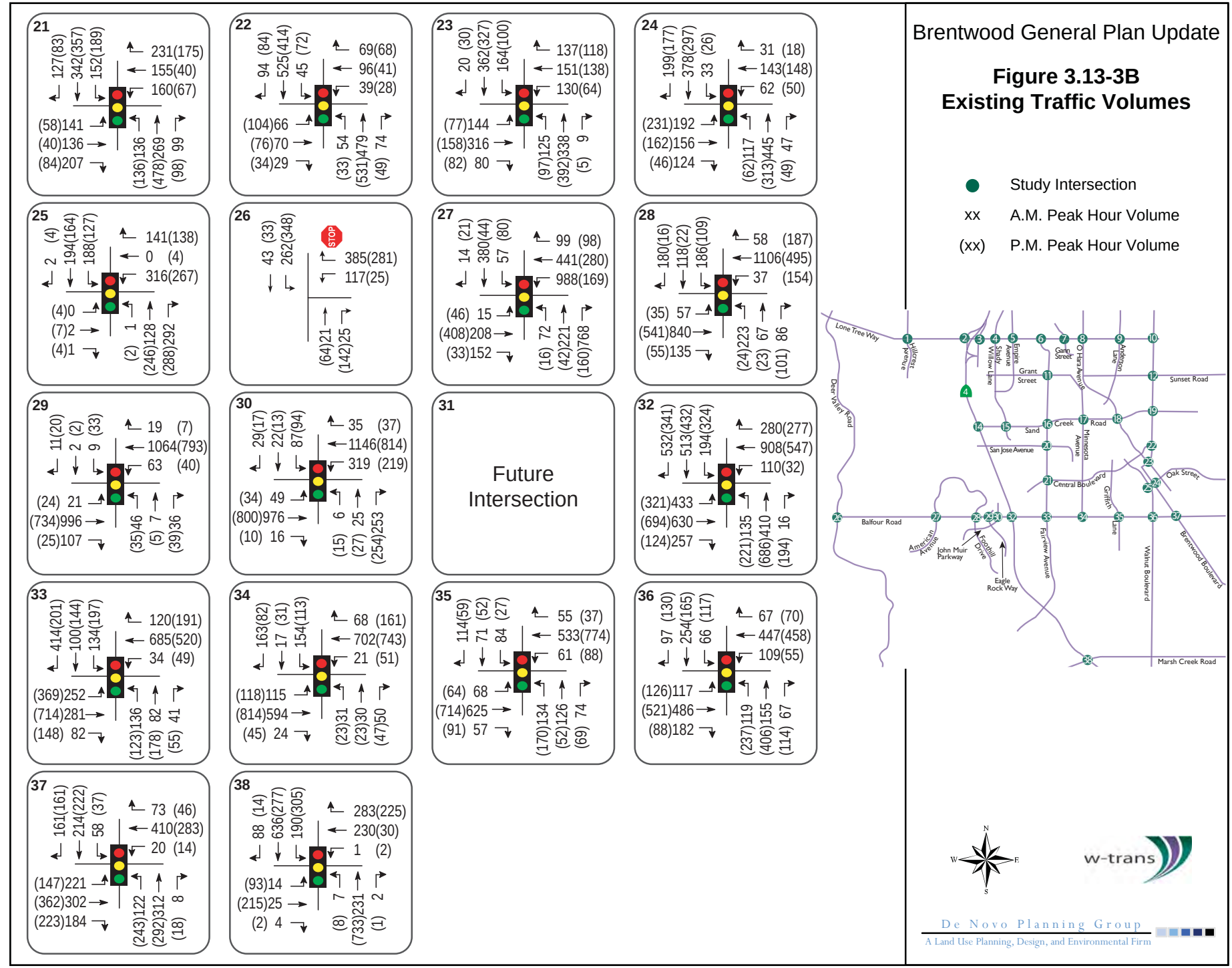
Brentwood General Plan Update

Figure 3.13-3B
Existing Traffic Volumes



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Brentwood General Plan Update

Figure 3.13-4
Pedestrian and Bicyclist Volumes

● Study Intersection

4	PM 2-Hour 10/12	Daily Estimate Annual Average
	25	300
	16	190

Shady Willow Ln/Lone Tree Wy

6	PM 2-Hour 10/12	Daily Estimate Annual Average
	30	350
	6	70

Fairview Ave/Lone Tree Wy

10	PM 2-Hour 10/12	Daily Estimate Annual Average
	6	70
	2	20

Brentwood Blvd/Lone Tree Wy

11	PM 2-Hour 10/12	Daily Estimate Annual Average
	13	150
	7	80

Fairview Ave/Grant St

12	PM 2-Hour 10/12	Daily Estimate Annual Average
	21	250
	10	120

Brentwood Blvd/Grant St

15	PM 2-Hour 10/12	Daily Estimate Annual Average
	26	300
	9	100

Shady Willow Ln/Sand Creek Rd

16	PM 2-Hour 10/12	Daily Estimate Annual Average
	15	190
	7	80

Fairview Ave/Sand Creek Rd

17	PM 2-Hour 10/12	Daily Estimate Annual Average
	14	170
	5	70

Minnesota Ave/Sand Creek Rd

19	PM 2-Hour 10/12	Daily Estimate Annual Average
	32	370
	14	170

Brentwood Blvd/Sand Creek Rd

20	PM 2-Hour 10/12	Daily Estimate Annual Average
	11	130
	9	100

Fairview Ave/San Jose Ave

21	PM 2-Hour 10/12	Daily Estimate Annual Average
	3	30
	15	190

Fairview Ave/Central Blvd

22	PM 2-Hour 10/12	Daily Estimate Annual Average
	44	520
	12	130

Brentwood Blvd/Central Blvd

23	PM 2-Hour 10/12	Daily Estimate Annual Average
	92	1080
	10	120

Brentwood Blvd/2nd St

24	PM 2-Hour 10/12	Daily Estimate Annual Average
	30	350
	1	20

Brentwood Blvd/Oak St

25	PM 2-Hour 10/12	Daily Estimate Annual Average
	12	130
	9	100

Walnut Blvd/Oak St

27	PM 2-Hour 10/12	Daily Estimate Annual Average
	49	570
	3	30

American Ave/Balfour Rd

29	PM 2-Hour 10/12	Daily Estimate Annual Average
	49	570
	5	70

John Muir Pkwy/Balfour Rd

33	PM 2-Hour 10/12	Daily Estimate Annual Average
	15	190
	19	220

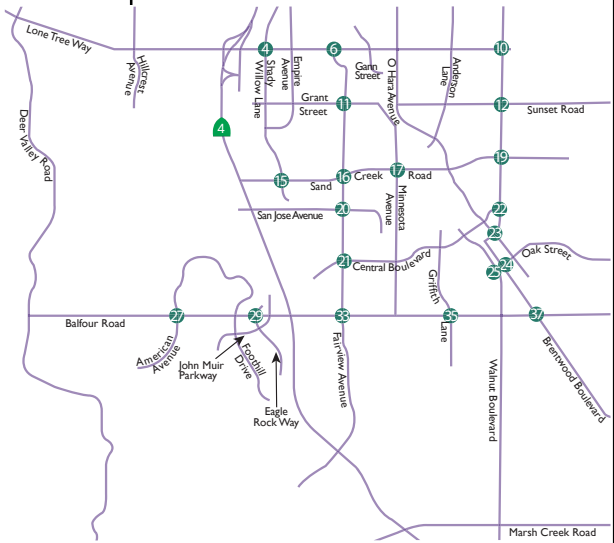
Fairview Ave/Balfour Rd

35	PM 2-Hour 10/12	Daily Estimate Annual Average
	8	100
	6	70

Griffith Ln/Balfour Rd

37	PM 2-Hour 10/12	Daily Estimate Annual Average
	25	300
	10	120

Brentwood Blvd/Balfour Rd



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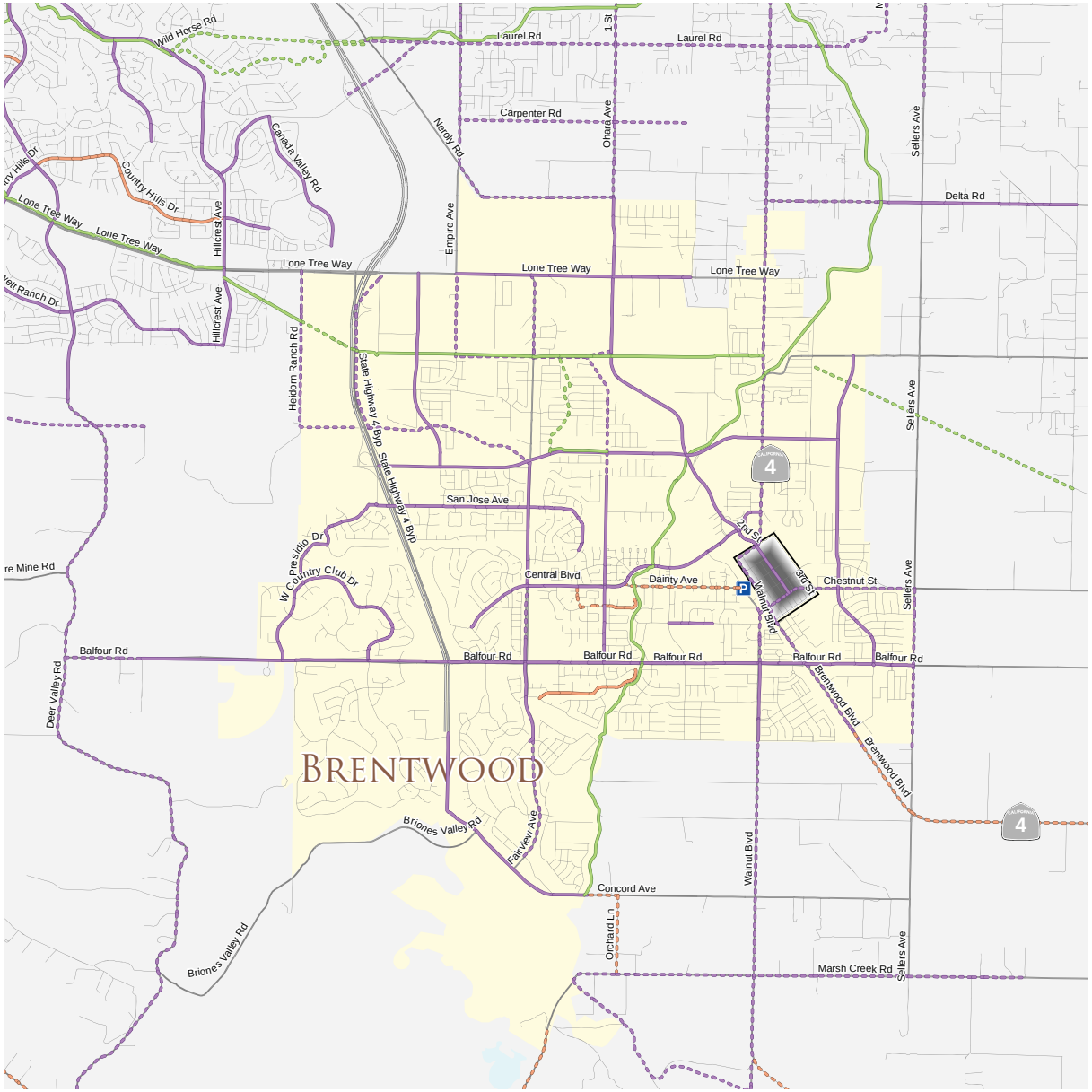

Source: Contra Costa Transportation Authority, 2013

Brentwood General Plan Update

Figure 3.13-5
Existing and Planned Bicycle Facilites

Bicycle Facilities
- Existing Class I
- Proposed Class I
- Existing Class II
- Proposed Class II
- Existing Class III
- Proposed Class III
- Park-and-Ride
- Downtown/Town Center
- City Limit

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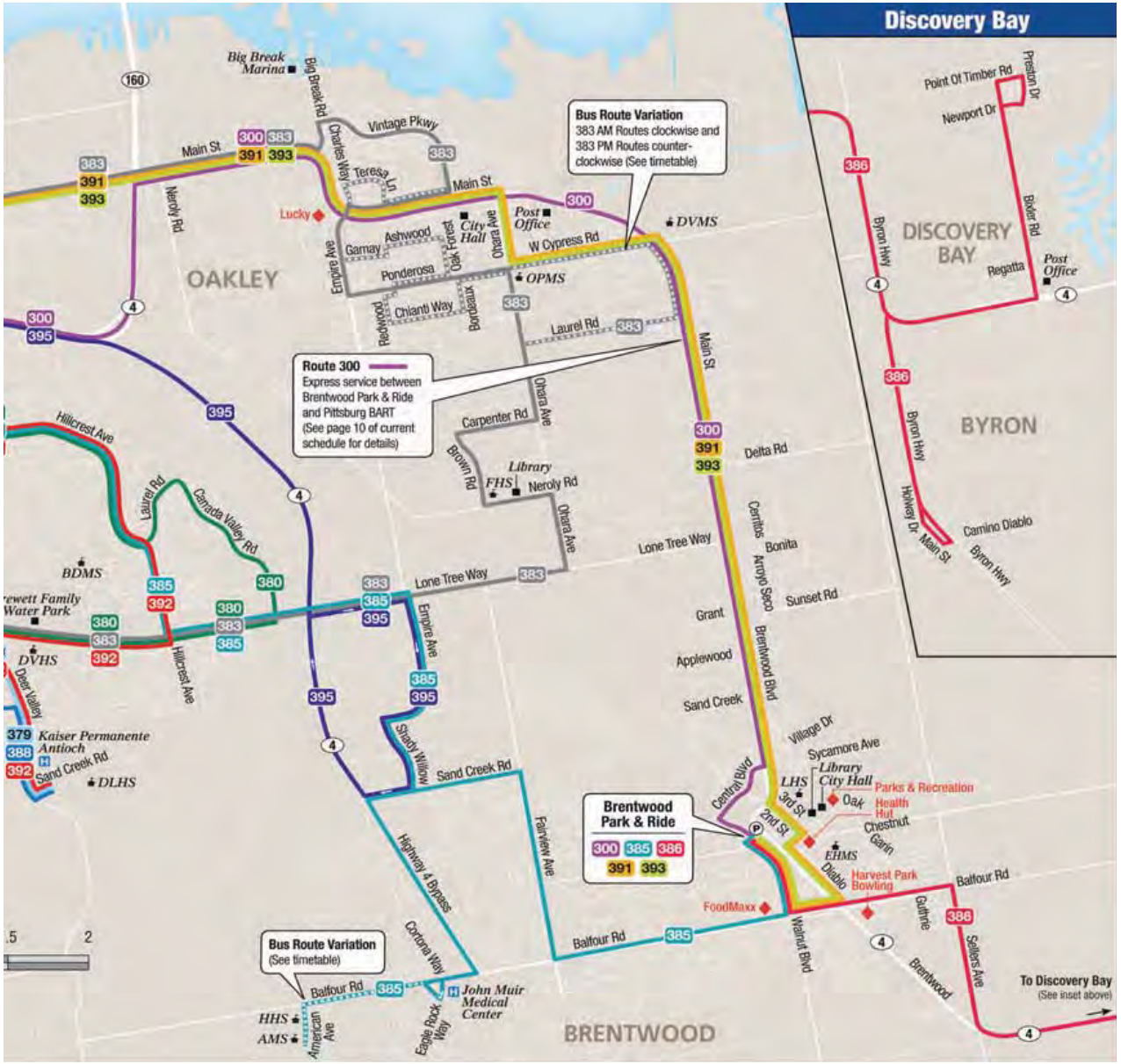
Brentwood General Plan Update

Figure 3.13-6
Transit Routes and Facilities



Source: Tri Delta Transit
System Map Effective 10/1/12

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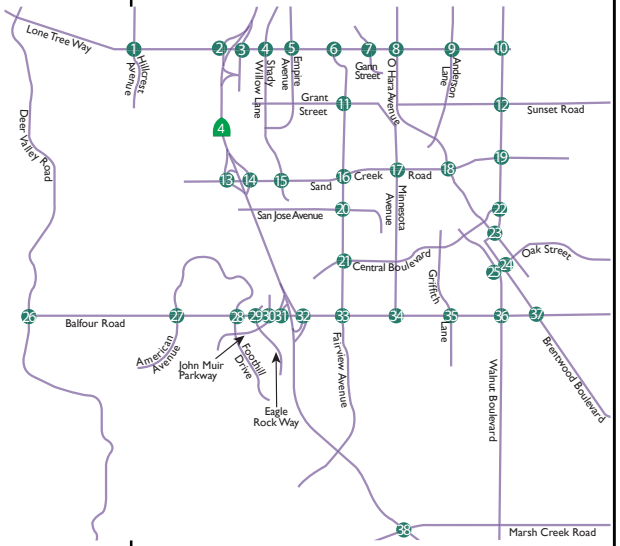
Brentwood General Plan Update

Figure 3.13-7A
General Plan Buildout to City Limits Traffic Volumes

- Study Intersection
- xx A.M. Peak Hour Volume
- (xx) P.M. Peak Hour Volume



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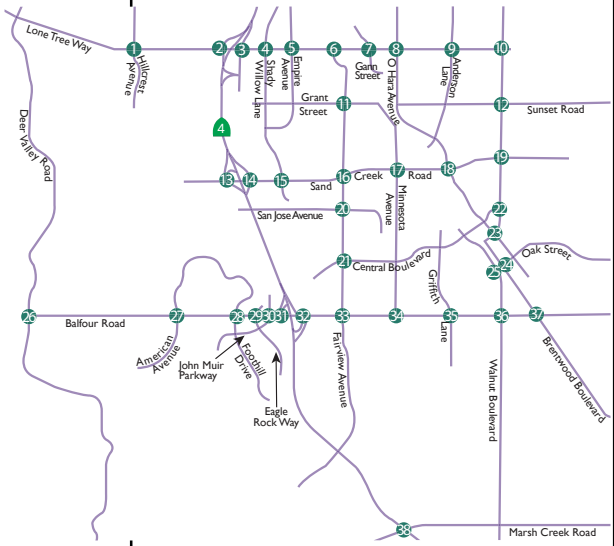
Brentwood General Plan Update

Figure 3.13-7B
General Plan Buildout to City Limits Traffic Volumes

- Study Intersection
- xx A.M. Peak Hour Volume
- (xx) P.M. Peak Hour Volume



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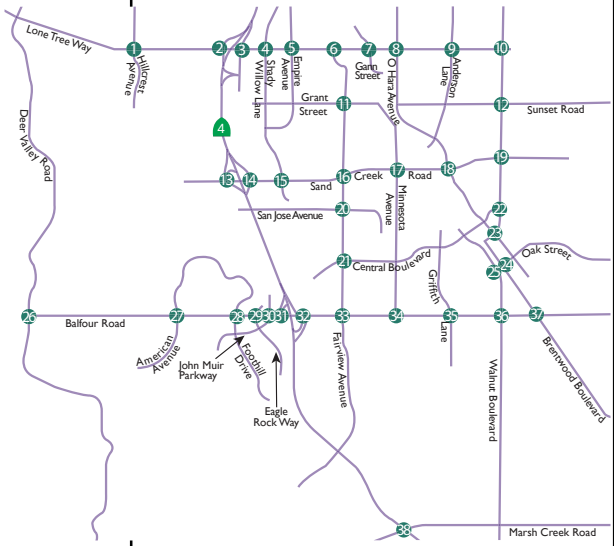
Brentwood General Plan Update

Figure 3.13-8A
General Plan Buildout to Plan Area Traffic Volumes

- ● Study Intersection
- xx A.M. Peak Hour Volume
- (xx) P.M. Peak Hour Volume



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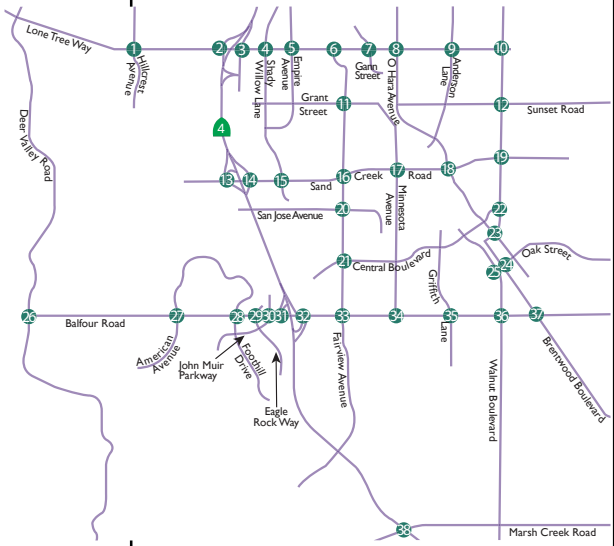
Brentwood General Plan Update

Figure 3.13-8B
General Plan Buildout to Plan Area Traffic Volumes

- Study Intersection
- xx A.M. Peak Hour Volume
- (xx) P.M. Peak Hour Volume



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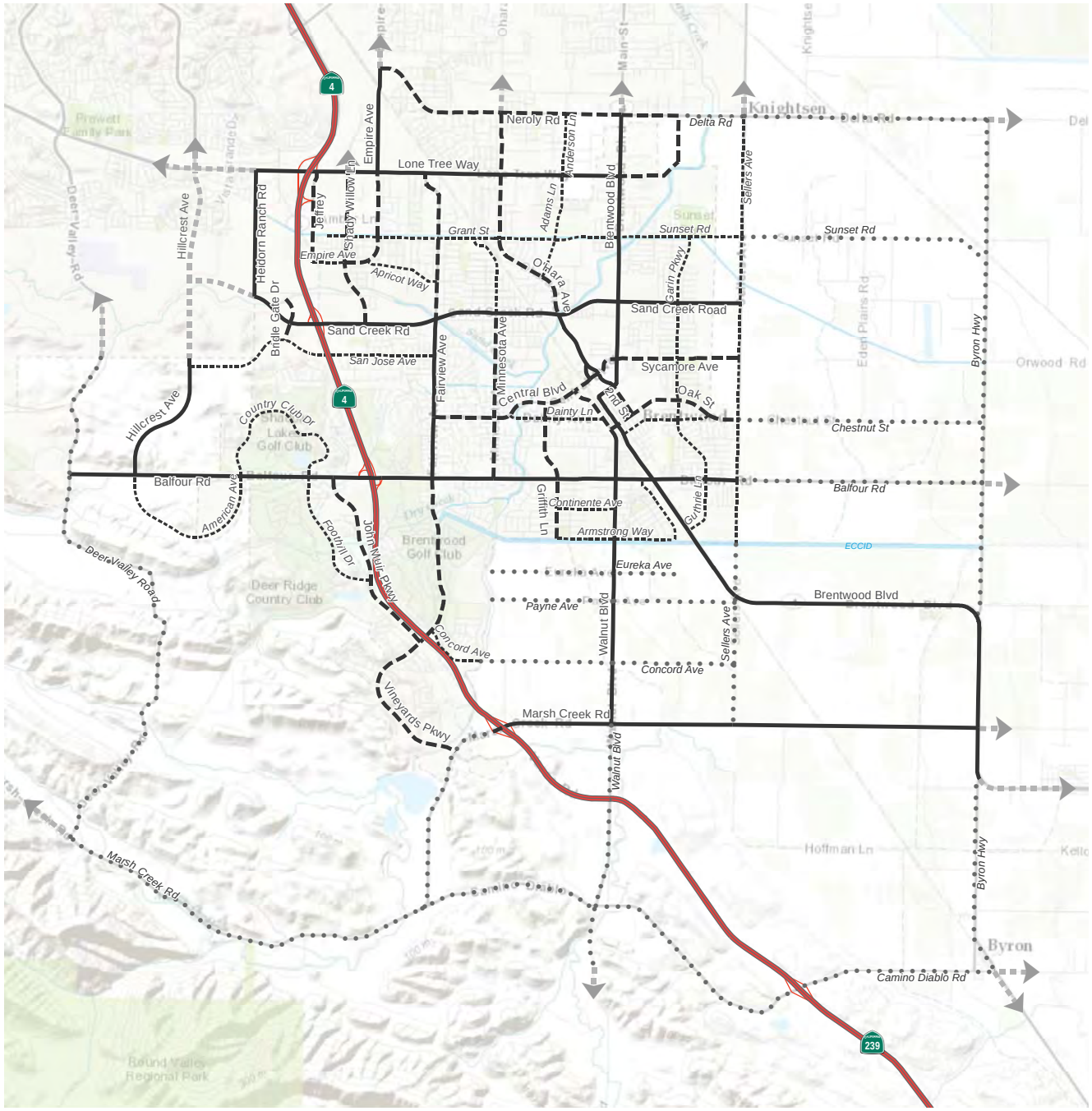
Brentwood General Plan Update

Figure 3.13-9
Brentwood Area Roadway Network



Sources: ESRI, CCTA, City of Brentwood

- Freeway
- Major Arterial (4 or 6 Lanes)
- Minor Arterial (2 or 4 Lanes)
- Collector
- Rural Byway

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Utilities are critical to providing safe drinking water, disposal and treatment of wastewater, stormwater drainage, and solid waste disposal. This section provides a background discussion of the utility systems in Brentwood including water supplies, wastewater, storm drainage, and solid waste. This section is organized with an existing setting, regulatory setting, and impact analysis.

3.14.1 WATER SUPPLIES

The City of Brentwood owns and operates a water supply and distribution system that supplies potable water to residences and businesses within the city limits. The City's potable water supply comes from a combination of surface and groundwater supply sources.

KEY TERMS

Acre feet: The volume of one acre of water to a depth of one foot. Each acre-foot of water is equal to approximately 325,851.4 gallons.

BGS: Below ground surface.

GPD: Gallons per day.

GPM: Gallons per minute.

Groundwater: Water that is underground and below the water table, as opposed to surface water, which flows across the ground surface. Water beneath the earth's surface fills the spaces in soil, gravel, or rock formations. Pockets of groundwater are often called "aquifers" and are the source of drinking water for a large percentage of the population in the United States. Groundwater is often extracted using wells which pump the water out of the ground and up to the surface. Groundwater is naturally replenished by surface water from precipitation, streams, and rivers when this recharge reaches the water table.

MG: Million gallons

MGD: Million gallons per day

Surface water: Water collected on the ground or from a stream, river, lake, wetland, or ocean. Surface water is replenished naturally through precipitation, but is lost naturally through evaporation and seepage into soil.

WATER SUPPLIES

The City of Brentwood has the following existing water supplies:

- Treated surface water for potable water uses;
- Untreated surface water for landscape irrigation and industrial uses;
- Groundwater for potable water uses; and
- Recycled water for nonpotable water uses.

Approximately 58% of the City's water supply is from treated surface water, 30% from groundwater, 10% from untreated surface water for landscape irrigation, and 0.5% from recycled water (City of Brentwood UWMP, 2011). Each source of supply is described below.

Surface Water

Brentwood's surface water supply is from the San Joaquin River Delta. In 2004, the City entered into an agreement with the East Contra Costa Irrigation District (ECCID) that provides the City with a permanent entitlement to purchase 14,800 acre-feet per year (AFY) of surplus irrigation water from the Delta. ECCID has pre-1914 water rights, which are not subject to delivery reductions during water shortages, including regulatory restricted and drought years. The water purchased by the City may only be used by the City and its retail customers within the City limits or within the ECCID service area (CCCLAFCO, 2007).

The City can receive treated surface water from two water treatment plants: the City of Brentwood Water Treatment Plant (COBWTP) and the Randall Bold Water Treatment Plant (RBWTP).

The COBWTP was built in 2008 to serve the City. The project was a joint venture between the City and the Contra Costa Water District (CCWD). The City owns the facility and is responsible for operating and capital costs. The City contracts with CCWD to provide operations and maintenance for the facility. The COBWTP, located in Oakley, has a current capacity of 16.5 mgd, with an ultimate capacity of 30 mgd. The COBWTP is anticipated to meet the City's demands through 2040. The COBWTP treats raw water that the City purchases from ECCID and diverts from Old River and Rock Slough. Plant processes include flocculation, sedimentation, ozonation, and filtration. Treated water is disinfected using chloramines. The water treatment plant (WTP) supplies the distribution system via a booster pump station located at the plant and a large diameter transmission pipeline.

Prior to completion of the COBWTP, the City's ECCID supply was treated at the RBWTP. The RBWTP, located adjacent to the COBWTP, is jointly owned by Diablo Water District (DWD) and CCWD, and is operated by CCWD. The DWD portion of the facility delivers water to the City of Oakley. The CCWD portion of the facility supplies water to the cities of Brentwood and Antioch, the Golden State Water Company (Bay Point), and CCWD's Treated Water Service Area. The COBWTP and the RBWTP are located adjacent to one another and share certain facilities and operational staff. Some facilities are owned by CCWD or owned by the RBWTP under a Joint Powers Agreement with the Cities of Antioch, Brentwood, and Oakley, as well as Contra Costa County. The COBWTP has interim use of the RBWTP's service roads until a separate, independent access road can be constructed by the City on Empire Avenue (CCWD, 2011). The City has purchased a permanent capacity share of 6 mgd in the RBWTP, entitling the City to up to 6 mgd of treated water for use within the area that overlaps between the City and CCWD, with the source of this water from the City's ECCID supply (CCLAFCO, 2007). The City also has the ability to purchase additional treated water from CCWD (City of Brentwood UWMP, 2011).

The City obtains raw surface water for non-potable landscape irrigation from the ECCID Canal. Water is pumped to the non-potable irrigation system via the Roddy Ranch Pump Station, located on the canal. Current users include golf courses, parks, schools, and commercial landscape areas.

The City purchased 397 million gallons (1.09 mgd average daily use) in 2010. The City projects a purchase of about 500 million gallons per year by 2035 (City of Brentwood UWMP, 2011).

Groundwater

The City has nine permitted wells within its service area, seven of which are active wells. The City has two main well fields, with five of the wells located in the northeast part of the city, and two wells located to the south.

City wells have capacities ranging from 0.36 mgd (250 gpm) to 1.44 mgd (1,000 gpm). The total design capacity of the wells is 6.63 mgd. The firm design capacity of the wells, where firm capacity is the capacity of all the wells minus the capacity of the largest well, is 5.19 mgd. Annual production from the seven active wells averaged 4.13 mgd for the 2000 through 2010 period.

Table 3.14-1 summarizes annual pumped groundwater volumes from 2006 to 2010. The percentage of groundwater supply versus total water supply has decreased over the years because of increases in the use of surface water supplies from the City of Brentwood Water Treatment Plant and recycled water supplies from the Brentwood Wastewater Treatment Plant.

TABLE 3.14-1: GROUNDWATER (VOLUME PUMPED- MILLION GALLONS PER YEAR)

	2006	*2007*	*2008*	*2009*	*2010*
Total Groundwater Pumped	1,886	1,331	1,474	1,235	1,152
Groundwater as a percent of total water supply	48%	30%	33%	29%	29%

SOURCE: CITY OF BRENTWOOD URBAN WATER MANAGEMENT PLAN (2010).

Table 3.14-2 presents the volume of groundwater projected to be pumped from 2015 to 2035. Projected percentages of total water supply remain consistent with those in the recent past (i.e., 2009 and 2010).

TABLE 3.14-2: GROUNDWATER (VOLUME PROJECTED TO BE PUMPED- MILLION GALLONS PER YEAR)

	2015	*2020*	*2025*	*2030*	*2035*
Total Groundwater Pumped	1,234	1,229	1,351	1,423	1,492
Groundwater as a percent of total water supply	30%	29%	29	28%	28%

SOURCE: CITY OF BRENTWOOD URBAN WATER MANAGEMENT PLAN (2010).

Groundwater is treated with chloramines for disinfectant at the wellhead prior to delivery to the distribution system. Of the wells that are not in use, one does not currently have a disinfection system, and the other is not used due to high nitrate concentrations.

The City's wells are located within the northwest part of the Tracy Subbasin of the San Joaquin Valley Groundwater Basin. The Tracy Subbasin has a total surface area of 539 square miles and is bounded by the Diablo Range of the Coast Range foothills on the west, the San Joaquin and Mokelumne Rivers on the north, the San Joaquin River to the east, and the San Joaquin-Stanislaus county line on the south. The Tracy Subbasin is comprised of continental deposits of Late Tertiary to Quaternary age. Deposits include the Tulare Formation, Older Alluvium, Flood Basin Deposits, and Younger Alluvium (California Department of Water Resources, 2006). The City's wells range in depth from 200 to 660 feet, and draw from the Tulare Formation, which consists of semi-consolidated, poorly sorted, discontinuous deposits of clay, silt, and gravel. The Corcoran clay occurs near the top of the formation and confines the underlying fresh water deposits formed by deposition from streams that originate in the Coast Range hills to the west.

A California Department of Water Resources review of hydrographs (plots of water levels over time) indicates that except for seasonal variation resulting from recharge and pumping, the majority of water levels in wells have remained relatively stable over at least the 10 year period prior to 2006. A groundwater budget, estimating the subbasin inflows and outflows, has not been prepared for the subbasin.

Recycled Water Supplies

Recycled water is an important part of the City's water resources. Recycled water allows the City to conserve potable water, thereby ensuring a reliable water supply for current and future demand. The City of Brentwood Wastewater Treatment Plant is used for treatment and disposal, or reuse, of wastewater generated in the City's service area. Wastewater is collected by gravity in a series of mains, trunks, and interceptors. Collected wastewater is then transported to the Wastewater Treatment Plant, which currently has a treatment capacity of 5 mgd but is capable of expanding to 10 mgd in 2.5 mgd increments during peak wet-weather flows. In 2010, the average influent to the Wastewater Treatment Plant was 3.16 mgd. The Wastewater Treatment Plant's tertiary treatment provides recycled water for landscaping as well as processes at the Antioch Building Materials concrete batch plant. According to the City's 2010 billing records, the Wastewater Treatment Plant supplied 1.1 million gallons of recycled water to the concrete batch plant and 17 million gallons to five landscape users (e.g., commercial enterprises and parkways) in 2010. Table 3.14-3 summarizes the historic and projected volumes of collected and treated wastewater that could be delivered for recycled water uses.

TABLE 3.14-3 RECYCLED WATER (WASTEWATER COLLECTION AND TREATMENT)

WASTEWATER TYPE	*2005*	*2010*	*2015*	*2020*	*2025*	*2030*	*2035*
Wastewater Collected and Treated in Service Area	1,168	1,176	2,562	3,947	5,620	9,200	9,200
Volume that Meets Recycled Water Standard	1,087	1,166	2,462	3,794	5,401	7,087	8,842

SOURCE: CITY OF BRENTWOOD URBAN WATER MANAGEMENT PLAN (2010).

Non Potable Water

The City obtains raw water via the Roddy Ranch Pump Station on the East Contra Costa Irrigation District Canal to the non-potable distribution system. It is used primarily for irrigation purposes. Current users include golf courses, parks and parkways, schools, and commercial landscaped areas. Table 3.14-4 presents the contracted and projected non-potable water demands from 2015 through 2035.

TABLE 3.14-4: RETAIL AGENCY DEMAND PROJECTIONS PROVIDED TO WHOLESALE SUPPLIERS

2010 CONTRACTED VOLUME	*2015 PROJECTED VOLUME*	*2020 PROJECTED VOLUME*	*2025 PROJECTED VOLUME*	*2030 PROJECTED VOLUME*	*2035 PROJECTED VOLUME*
397 mgy	425 mgy	424 mgy	466 mgy	491 mgy	514 mgy

SOURCE: CITY OF BRENTWOOD URBAN WATER MANAGEMENT PLANT (2010).

WATER DISTRIBUTION SYSTEM

The City maintains a potable water distribution system, which is served by wells, the RBWTP, and the COBWTP, a non-potable recycled water distribution system supplied from the City's WWTP, and a non-potable irrigation water system supplied from ECCID's canal. The two non-potable water systems are connected, and can be operated together or independently of each other by opening or closing system valves. Currently, the two systems are operated independently.

The potable water system has three pressure zones, seven booster pump stations, and six distribution system reservoirs. Figure 3.14-1 shows a plan view map of existing and planned potable water system facilities (as of 2006).

As of 2007, the City maintained 172 miles of distribution system mains. The oldest water mains were constructed in 1940. Distribution system pipelines range in diameter. Larger diameter transmission mains have been constructed to integrate surface water into the distribution system.

Zone 1 is the largest zone, covering the east side of the city. The zone provides service to customers with elevations ranging from 0 to 110 feet. Zone 2 is located in the hills on the west and southwest side of the city and serves customers with elevations ranging from 110 feet to 220 feet. Zone 3 is the highest elevation zone and is split into three isolated islands that operate as independent subzones, serving customers with elevations ranging from 220 feet to 330 feet. Zone 1 is supplied directly by the wells, the RBWTP and the COBWTP. The zone has three distribution system storage reservoirs, with a total storage volume of 10.8 million gallons (MG) to provide for operational, fire, and emergency needs. Zone 2 is supplied via three booster pump stations. The zone has three distribution system reservoirs, with a total capacity of 8.0 MG. All Zone 3 subzones are currently hydropneumatic zones, with no reservoir storage located in the zones.

Future expansion of the system will be in new development areas planned for Zones 1, 2, and 3. Proposed pipelines for the future expansion areas are shown on Figure 3.14-1. Zone 1 will include new pipelines on the north side and east side of the zone, north of Sycamore Avenue and east of the Union Pacific Railroad tracks. Zone 2 will be expanded on the northwest side of the system, to

the east and west of State Route 4 to Heidorn Ranch Road on the west side of the system, and on the south side of the system along Vineyards Parkway, west of State Route 4. Future expansion in Zone 3 includes extension of Zone 3 Central, to the west, south of Balfour Road to Deer Valley Road, and completion of Zone 3 south, along Vineyard Parkway. Also, some of the southern areas of Zone 2 and Zone 3 are under construction.

As part of the Water Master Plan, facilities and hydraulic evaluations were performed to identify future system needs. Findings from the Water Master Plan are summarized below:

- The City will not expand well supply, but will continue to maintain its existing well supply to provide a pumping capacity of at least 5 mgd to meet buildout maximum day demands. By buildout, existing well pumps may need to be replaced with higher head pumps to overcome higher system headlosses due to higher demands under buildout conditions.

- New storage will be needed in Zones 1, 2, and 3 to provide additional operational, fire, and emergency storage to meet buildout demands. Zone 1 will require 10 MG of new storage; Zone 2 will require 3 MG of new storage; and Zone 3 will require 2 MG of new storage (see Figure 3.14-1 for planned storage locations, by zone; Reservoir 1-3 and 2-3, all shown as future facilities have since been constructed). With the existing 18.8 MG of storage capacity, this will provide a total storage capacity of 33.8 MG at buildout. Zone 2 storage capacities include demands for the two Zone 3 subzones that will remain hydropneumatic zones.

- Expansion of existing pump stations or new pump stations will be needed in Zones 1, 2, and 3 to meet buildout demands. In Zone 1, a new 8.6 mgd pump station will be needed to access planned ground-level storage on the east side of the system. In Zone 2, Pump Station (PS) 2.1 will be expanded from 3.6 mgd of firm capacity to 9.3 mgd firm capacity, hydropneumatic PS 2.2 will be converted from a hydropneumatic pump station to a booster pump station with a firm capacity of 2.3 mgd. PS 2.3 has been constructed since completion of the Water Master Plan, and has a firm capacity of 3.9 mgd. In Zone 3, hydropneumatic PS 3.2 will be converted to a booster station with 2.0 mgd of capacity. The new 4.0 mgd hydropneumatic PS 3.3 has been constructed since completion of the Water Master Plan.

- The hydraulic analysis found that, in general, the City's existing pipelines are adequately sized to meet buildout demands, in conjunction with installation of future pipelines as new areas are developed.

The Water Master Plan did not include development of a capital improvement program with cost estimates for construction of future facilities. However, each year, the City prepares a comprehensive five-year capital improvement program (CIP) identifying all major City capital improvements to be implemented within the five-year horizon. The current CIP (FY 2013-14 through 2017-18) includes $13.04M in water system improvements, identified in Table 3.14-5.

TABLE 3.14-5: WATER SYSTEM CAPITAL IMPROVEMENTS IDENTIFIED IN THE CITY'S FY 2013-14 CAPITAL IMPROVEMENT PROGRAM

Project	Description	Timeframe	Funding ($M)
Brentwood Boulevard Sewer and Water Main	2,300 feet of new 12-inch sewer and water mains along Brentwood Boulevard from Lone Tree Way to the northerly city limits (see Brentwood Boulevard Specific Plan discussion below).	FY 2014-15 through FY 2016-17	$2.65
Brentwood Water Treatment Plan Maintenance and Capital Upgrades	Upgrade or replace existing plant facilities, or installation of new facilities, due to wear and tear or new treatment standards. Projects will consist of treatment plant restoration, filter media replacement and upgrade of the distributed control system (DCS).	Ongoing	$1.68
Downtown Alley Rehabilitation	Installation of new water and sewer facilities, rehabilitation of existing infrastructure to accommodate future redevelopment and to correct existing O&M constraints due to age of facilities.	FY 2015-16 through FY 2017-18	$1.35
Parkway Rehabilitation	Project includes the installation of new water and sewer facilities, the rehabilitation of existing facilities and either the removal or replacement of existing infrastructure to accommodate future development and to correct existing operations and maintenance constraints due to the age of facilities.	FY 2013-14	$0.45
RBWTP Maintenance and Capital Upgrades	Upgrade or replace existing plant facilities, or install new facilities, due to wear and tear or new treatment standards.	Currently Being Implemented. Through FY 2017/18	$1.01
Sensus AMR System Upgrade	Install fixed base Sensus meter reading system to eliminate need for driving meter routes to read meters.	FY 2013-14 through FY 2017-18	$0.82
Underground Water	Install cathodic protection systems	Currently Being	$0.20

TABLE 3.14-5: WATER SYSTEM CAPITAL IMPROVEMENTS IDENTIFIED IN THE CITY'S FY 2013-14 CAPITAL IMPROVEMENT PROGRAM			
Project	**Description**	**Timeframe**	**Funding ($M)**
System Corrosion Mitigation	to protect water system facilities from corrosion.	Implemented. Through FY 2015-16	
Water Distribution System Rehabilitation	Replace or repair water system appurtenances, such as valves, hydrants, air release valves, sample stations, to ensure compliance with State and Federal drinking water regulations	Ongoing	$0.78
Water System Connections/Regulating	Install new water connections across Union Pacific Railroad, Marsh Creek and State Route 4 Bypass to ensure adequate flow of water throughout the City.	Currently Being Implemented. Through FY 2013-14	$0.6
Zone 1 Equalization Storage Reservoirs	Construct 10 MG of buried equalization storage in Zone 1.	Currently Being Implemented. Through FY 2017-18.	$3.5

SPECIFIC PLAN AREAS

Brentwood has two Specific Plan areas for which it has more detailed planning: the Downtown Specific Plan and the Brentwood Boulevard Specific Plan.

The Downtown Specific Plan, adopted November 16, 2005, provides for a stronger Downtown core to increase business, civic, and cultural activity. The plan includes improvements to address water and sewer infrastructure. These improvements were included in the 2005/06-2009/10 Capital Improvement Program, with funding of $3.0 million (City of Brentwood, 2005).

The Brentwood Boulevard Specific Plan, adopted March 27, 2012, provides for redevelopment of Brentwood Boulevard. This street, formerly SR 4 right-of-way, was relinquished to the City upon completion of SR 4. The City has no water mains in the northern part of Brentwood Boulevard. Implementation of the Specific Plan calls for extension of new water mains within Brentwood Boulevard. The Brentwood Boulevard Specific Plan identifies the following planned water distribution facilities:

<u>Northern Area</u>

- A pipeline along the northern boundary of the specific plan area west of Brentwood Boulevard.
- A pipeline along the northern boundary of the specific plan area east of Brentwood Boulevard within the future Delta Road right-of-way.

- A pipeline within Brentwood Boulevard along the northern boundary of the specific plan area west of Brentwood Boulevard.

Central Area

- A water main running east/west is planned in conjunction with future development. The specific location of this main is not identified.

Southern Area

- A pipeline running east/west within the right-of-way of a future minor arterial/collector roadway.
- A pipeline within the existing O'Hara Avenue right-of-way between Sand Creek Road and Central Avenue.

The Brentwood Boulevard Specific Plan also includes a description of area improvements that are identified in the City's current Capital Improvement Program. Utility projects include:

- Install sewer main approximately 2,300 feet along Brentwood Boulevard from Lone Tree Way to the northern City limits, estimated at $2.0M.

Subsequent projects will be identified in future Capital Improvement Programs.

Comparison of the Brentwood Boulevard Specific Plan utilities maps and the Water Master Plan distribution system map indicates that some of the planned future pipelines in this area were identified in the Water Master Plan, but more specific alignments are identified in the Brentwood Boulevard Specific Plan.

REGULATORY SETTING – WATER SUPPLIES

STATE

California Department of Health Services

The Department of Health Services, Division of Drinking Water and Environmental Management, oversees the Drinking Water Program. The Drinking Water Program regulates public water systems and certifies drinking water treatment and distribution operators. It provides support for small water systems and for improving their technical, managerial, and financial capacity. It provides subsidized funding for water system improvements under the State Revolving Fund ("SRF") and Proposition 50 programs. The Drinking Water Program also oversees water recycling projects, permits water treatment devices, supports and promotes water system security, and oversees the Drinking Water Treatment and Research Fund for MTBE and other oxygenates.

California Code of Regulations

California Code of Regulations (CCR) Title 22, Chapter 15, Article 20 requires all public water systems to prepare a Consumer Confidence Report for distribution to its customers and to the Department of Health Services. The Consumer Confidence Report provides information regarding

the quality of potable water provided by the water system. It includes information on the sources of the water, any detected contaminants in the water, the maximum contaminants levels set by regulation, violations and actions taken to correct them, and opportunities for public participation in decisions that may affect the quality of the water provided.

Urban Water Management Planning Act

The Urban Water Management Planning Act has as its objectives the management of urban water demands and the efficient use of urban water. Under its provisions, every urban water supplier is required to prepare and adopt an urban water management plan. An "urban water supplier" is a public or private water supplier that provides water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. The plan must identify and quantify the existing and planned sources of water available to the supplier, quantify the projected water use for a period of 20 years, and describe the supplier's water demand management measures. The urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The Department of Water Resources must receive a copy of an adopted urban water management plan.

Senate Bill (SB) 610 and Assembly Bill (AB) 901

The State Legislature passed SB 610 and AB 901 in 2001. Both measures modified the Urban Water Management Planning Act.

SB 610 requires additional information in an urban water management plan if groundwater is identified as a source of water available to an urban water supplier. It also requires that the plan include a description of all water supply projects and programs that may be undertaken to meet total projected water use. SB 610 requires a city or county that determines a project is subject to CEQA to identify any public water system that may supply water to the project and to request identified public water systems to prepare a specified water supply assessment. The assessment must include, among other information, an identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and water received in prior years pursuant to these entitlements, rights, and contracts.

AB 901 requires an urban water management plan to include information, to the extent practicable, relating to the quality of existing sources of water available to an urban water supplier over given time periods. AB 901 also requires information on the manner in which water quality affects water management strategies and supply reliability. The bill requires a plan to describe plans to supplement a water source that may not be available at a consistent level of use, to the extent practicable. Additional findings and declarations relating to water quality are required.

Senate Bill (SB) 221

SB 221 adds Government Code Section 66455.3, requiring that the local water agency be sent a copy of any proposed residential subdivision of more than 500 dwelling units within five days of the subdivision application being accepted as complete for processing by the city or county. It also

adds Government Code Section 66473.7, establishing detailed requirements for establishing whether a "sufficient water supply" exists to support any proposed residential subdivisions of more than 500 dwellings, including any such subdivision involving a development agreement. When approving a qualifying subdivision tentative map, the city or county must include a condition requiring availability of a sufficient water supply. The applicable public water system must provide proof of availability. If there is no public water system, the city or county must undertake the analysis described in Government Code Section 66473.7. The analysis must include consideration of effects on other users of water and groundwater.

LOCAL

City of Brentwood Urban Water Management Plan (2010)

The purpose of the 2010 Urban Water Management Plan is to ensure efficient use of urban water supplies in the city of Brentwood and promote conservation. The UWMP discusses not only the availability of water but also water use, reclamation, and water conservation activities. The UWMP complies with the Urban Water Management Planning Act (UWMP Act) (California Water Code [CWC] Section 10610 et seq.), the Water Conservation Act of 2009 (CWC Section 10608), and the 20x2020 Water Conservation Plan, which are being implemented by the California Department of Water Resources (DWR).

City of Brentwood Water Master Plan (2006)

The City's 2006 Water Master Plan includes a summary of the City's system-wide water demands, the planning criteria used to determine water system demands, the City's water distribution system model, an analysis of the City's water system, and a summary of existing and future water system facilities.

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project may have a significant impact on the environment associated with Utilities if it would:

1. Require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or

2. Have insufficient water supplies available to serve the project from existing entitlements and resources, or if new or expanded entitlements are needed.

IMPACTS AND MITIGATION MEASURES

Impact 3.14-1: General Plan implementation would result in an increased demand for water supplies (Less than Significant)

Implementation of the General Plan would result in increased population and employment growth within the Planning Area, and a corresponding increase in the demand for additional water supplies.

As described in Chapter 2.0, the General Plan is expected to accommodate up to 9,972 new residential dwelling units and up to 9,896,951 square feet of non-residential building space within the city limits at full buildout. This new growth within the city limits would increase the city's population by approximately 27,639 residents. The full development of the new non-residential uses shown in Table 2.0-2 would increase the employment in Brentwood by approximately 21,232 jobs.

As shown in Table 2.0-2, buildout of the General Plan could yield an additional 3,642 new residential units and 2,994,116 square feet of new non-residential building space within the Planning Area. This new growth would increase the Planning Area's population by approximately 11,419 residents. The full development of the new non-residential uses shown in Table 2.0-2 would increase the employment in the Planning Area by approximately 6,276 jobs.

Water users within the Brentwood service area include single-family residences, apartments, condominiums, commercial uses, industrial uses, business park uses, government uses, miscellaneous uses, landscape irrigation, pools, and mobile home customers.

The City currently has approximately 17,000 water service accounts. Total water production in 2008, the City's highest use year, was 4,537 million gallons. The predominant use was potable use, with some untreated water and recycled water served for landscape irrigation. Statistics are not available for 2008, however in 2010, 88% of water was potable use, and 12% was non-potable use. Total production equates to an average production of 12.4 million gallons per day (mgd).

The city has experienced significant growth in population in the last 10 years, with corresponding growth in water use. In 2001, the city's population was 26,200 and the city's water use was about 2,200 million gallons per year (5.9 mgd average daily water use). By 2010, the city's population had grown to 51,400, with an annual water use of about 3,900 million gallons per year (10.7 mgd average daily water use). The city, like most communities in California, has experienced lower water use in recent years due to drought and the downturn in the economy.

The city's water use is predominantly by residential customers. Of the 17,000 water service accounts, 14,900 are single-family residential accounts. Single-family residential use accounts for 65% of total water consumption. Landscape irrigation accounts for 27% of total water use, commercial/institutional for 5% of use, multi-family residential for 3% of total use, and other for 0.5% of total use (City of Brentwood UWMP, 2010, completed May 24, 2011).

The City's 2010 Urban Water Management Plan includes a projection of annual water use at full buildout. The city's projected average annual use at buildout is about 7,100 million gallons/year (19.5 mgd average daily demand).

Water use varies seasonally, with maximum water use typically occurring during the months of June, July, August, and September, due to increased landscape irrigation. The City must be able to meet demand from all supply sources on the maximum demand day of the year, and also provide adequate water distribution system facilities to supply customers and maintain adequate pressure on the maximum demand day. The City projects a maximum demand of 41 mgd at buildout (City of Brentwood UWMP, 2010).

Summary of Water Demands and Supplies

Table 3.14-6 summarizes annual projections of demands and supplies to meet those demands through 2035, as documented in the City's 2010 Urban Water Management Plan. Table 3.14-6 summarizes the same information for projected maximum day demands and supplies. Table 3.14-7 shows a range in demands from 2010 through 2035 based on two different growth rate projections: a high-growth curve, developed from earlier studies for the COBWTP, and a straight-line growth rate. Actual water demands are expected to fall in between these two projections.

TABLE 3.14-6: PROJECTED WATER DEMANDS AND SUPPLIES (MILLION GALLONS PER YEAR)

	2010	2015	2020	2025	2030	2035
Demand	3,020	3,768	3,754	4,125	4,345	4,556
Supplies						
RBWTP	563	603	601	660	695	729
COBWTP	1,704	1,824	1,817	1,997	2,103	2,205
Non-Potable Water	397	425	424	466	491	514
Groundwater	1,152	1,234	1,229	1,351	1,423	1,492
Recycled Water	18	18	45	133	224	311
Meter Adjustments	320	320	337	565	565	565
Totals (as reported in Table 5-1 in UWMP)	**3,905**	**4,180**	**4,192**	**4,689**	**5,023**	**5,343**
Difference between Supply and Demand	*885*	*412*	*438*	*564*	*678*	*787*
Totals with numbers as shown (with meter adjustments added)	***4,154***	***4,424***	***4,453***	***5,172***	***5,501***	***5,816***
Totals if meter adjustments are subtracted	***3,834***	***4,104***	***4,116***	***4,607***	***4,936***	***5,251***

SOURCE: 2010 URBAN WATER MANAGEMENT PLAN

TABLE 3.14-7: CURRENT AND PROJECTED MAXIMUM DAY POTABLE DEMANDS AND SUPPLIES (MGD)

	2010	2015	2020	2025	2030	2035
Maximum Daily Demand[1]	18.5-23	22-29	26-35	30-36.5	33.5-38	37-39.5
Well Supply	5	5	5	5	5	5
RBWTP and COBWTP Supply	10-12	13.5-18	17-24	21-24	28.5-31.5	32-34.5
Total Supply	**18.5-23**	**22-29**	**26-35**	**30-36.5**	**33.5-38**	**37-39.5**

SOURCE: WEST YOST ASSOCIATES, 2013

1: Range in demands is based on two possible growth scenarios. The lower numbers are based on a straight-line growth scenario from 2010 through 2040. The higher numbers are based on a high growth rate scenario in which water demands increase more rapidly through 2020, and then more slowly from 2020 to 2040.

As shown in Table 2.0-3, the projected buildout population of the proposed General Plan is lower than the projected buildout population of the existing General Plan by approximately nine percent. Therefore, buildout of the proposed General Plan would not exceed the water supply demand projections contained in the City's 2010 UWMP, which are based on projected buildout of the existing General Plan.

The proposed General Plan includes a range of policies and actions designed to ensure an adequate water supply for development and to minimize the potential adverse effects of increased water use. Policy IF 1-3 requires all development projects to mitigate their infrastructure service impacts or demonstrate that the City's infrastructure, public services, and utilities can accommodate the increased demand for services, and that service levels for existing users will not be degraded or impaired.

Policy IF 2-1 requires the City to ensure that the water system and water supplies are adequate to meet the needs of existing and future development. Action IF 2a requires the City to routinely assess its ability to meet demand for potable water by periodically updating the Water Master Plan. The proposed General Plan also includes a range of policies and actions that call for continued and ongoing water conservation measures, and measures to increase the availability and use of recycled water in order to decrease water supply demands from existing sources.

Given that projected water demands associated with General Plan buildout would not exceed the projected water supplies described in the 2010 Brentwood Urban Water Management Plan, and that the proposed General Plan includes a comprehensive set of goals, policies and actions to ensure an adequate and reliable source of clean potable water, impacts associated with water supplies are **less than significant.** The policies and actions listed below would further assist in ensuring that adequate water supplies are available to serve new growth projected under the proposed General Plan.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy IF 1-1: Provide adequate public infrastructure (i.e., street, sewer, water, and storm drain) to meet the needs of existing and future development.

Policy IF 1-2: Require development, infrastructure, and long-term planning projects to be consistent with all applicable City infrastructure plans, including the Water Master Plan, the Wastewater Master Plan, and the Capital Improvement Program.

Policy IF 1-3: Require all development projects to mitigate their infrastructure service impacts or demonstrate that the City's infrastructure, public services, and utilities can accommodate the increased demand for services, and that service levels for existing users will not be degraded or impaired.

Policy IF 1-4: Require new development projects to develop comprehensive infrastructure plans for City review and approval as part of an application submittal.

Policy IF 2-1: Ensure the water system and supply is adequate to meet the needs of existing and future development.

Policy IF 2-2: Ensure safe drinking water standards are met throughout the community.

Policy IF 2-3: Continue to implement a comprehensive water strategy that balances the need to supply water to all users served by the City with potable water use reduction measures.

Policy IF 2-4: Pursue additional water supply agreements to supplement the City's existing system.

Policy IF 2-5: Continue efforts to reduce potable water use and increase water conservation.

Policy IF 2-6: Use recycled water for landscaping irrigation within City roadways, parks, and facilities to the greatest extent feasible.

Policy COS 9-5: Promote water conservation among water users.

Policy COS 9-6: Continue to require new development to incorporate water efficient fixtures into design and construction.

Policy COS 9-7: Promote the use of reclaimed water and other non-potable water sources.

Policy COS 9-8: Encourage large-scale developments and golf course developments to incorporate dual water systems.

Policy COS 9-9: Encourage and support the use of drought-tolerant and regionally native plants in landscaping.

ACTIONS

Action IF 1a: Periodically review and update the various City master plans for the provision and/or extension of public services to serve existing and future development. These plans include, but are not limited to, the Water Master Plan, the Wastewater Master Plan, and the Capital Improvement Program.

Action IF 1b: Develop and regularly update a comprehensive plan which establishes priorities and corrects existing inadequacies in the City's infrastructure system.

Action IF 1c: As part of the development review process, determine the potential impacts of development and infrastructure projects on public infrastructure, and ensure that new development contributes its fair share toward necessary on and off-site infrastructure, as described in the Growth Management Element of the General Plan.

Action IF 1d: Through development review, ensure that infrastructure is adequately sized to accommodate the proposed development and, if applicable, allow for extensions to future developments.

Action IF 1e: Identify and apply for Federal, State, and regional funding sources set aside to finance infrastructure costs.

Action IF 1f: Develop and regularly update a comprehensive financing plan to accommodate the construction of master planned infrastructure.

Action IF 2a: Routinely assess the City's ability to meet demand for potable water by periodically updating the Water Master Plan.

Action IF 2b: Explore additional permanent water sources through, and contract with, agencies that may have surplus water availability, such as the Contra Costa Water District, the East Bay Municipal Utility District, the East Contra Costa Irrigation District, and other potential sources.

Action IF 2c: Regularly review and update the City's water conservation strategy to be consistent with current best management practices for water conservation, considering measures recommended by the State Department of Water Resources, the California Urban Water Conservation Council, and the Contra Costa Water District.

Action COS 9d: Develop and provide incentives to developers and businesses that use reclaimed water and other non-potable water for landscaping.

Action COS 9e: Continue to implement Chapter 17.630 of the Brentwood Municipal Code, particularly as it relates to water conservation efforts*.*

Action COS 9f: Provide a conservation page (or similar page) on the City's website that provides links to resource agencies and provides information regarding local and regional conservation and environmental programs, to the extent that the City has readily available information, including recycling guidance for single family residences, businesses, and apartments, opportunities for reuse of materials, a description of how to compost, and a description of methods to reduce water use, such as appropriate reuse and recycling of water, water conservation measures, and xeriscaping.

Action COS 9g: Develop a list of drought-tolerant and native plants appropriate for use in Brentwood and review development projects for adherence to this list.

Impact 3.14-2: General Plan implementation may require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (Less than Significant)

Development and growth in the city under the proposed General Plan would result in increased demand for water supplies, including water conveyance and treatment infrastructure. The proposed General Plan includes policies and actions to ensure that water supplies are provided at acceptable levels and to ensure that development and growth does not outpace the provision of available water supplies.

As described under Impact 3.14-1, the projected 2035 water supplies are adequate to meet demand that would be generated by buildout of the General Plan. As such, implementation and buildout of the General Plan would not result in the need to construct or expand water supply and treatment facilities that have not already been described and accounted for in the City's relevant water master plans, which include the 2010 Urban Water Management Plan and the 2006 Water Master Plan.

As future development and infrastructure projects are considered by the City, each project will be evaluated for conformance with the General Plan, Municipal Code, and other applicable

regulations. Subsequent development and infrastructure projects would also be analyzed for potential environmental impacts, consistent with the requirements of CEQA.

The proposed General Plan includes a range of policies and actions (listed above) to ensure that water supplies are provided in a timely fashion, are adequately funded, that new development funds its fair share of services, and that the provision of water supplies to new projects does not adversely affect the supply and reliability for existing customers.

Future development in the Planning Area would be required to connect to existing water distribution infrastructure in the vicinity of each site, pay the applicable water system connection fees, and pay the applicable water usage rates. Future projects may be required to implement site specific and limited off-site improvements to the water distribution system in order to connect new project sites to the City's existing water infrastructure network. The specific impacts of providing new and expanded waster distribution infrastructure cannot be determined at this time, as the General Plan does not propose any specific development projects or include details on any future development projects. However, any future improvements to the existing water distribution infrastructure would be primarily provided on sites with land use designations that allow for urbanized land uses, and the environmental impacts of constructing and operating the new water distribution infrastructure would likely be similar to those associated with new development, redevelopment, and infrastructure projects under the proposed General Plan. These impacts are described in the relevant chapters (Chapters 3.1 through 3.14, and 4.0) of this Draft EIR.

This Draft EIR addresses the potential impacts of development that may occur under the proposed General Plan, including residential, commercial, office, industrial, public facilities, and a range of other uses. Where potentially significant or significant impacts are identified, this EIR identifies mitigation measures to reduce the impacts and discloses which impacts cannot be reduced to less than significant levels. There are no additional environmental impacts, apart from those disclosed in the relevant chapters of this EIR, which are anticipated to occur. Therefore, this impact is considered **less than significant** and no additional mitigation is necessary.

3.14.2 WASTEWATER

This section describes the city of Brentwood's wastewater infrastructure, wastewater flows, treatment plant permit requirements, and previous infrastructure planning. The City provides wastewater collection, treatment, and disposal services for its residents and businesses, comprising approximately 15,600 residential connections and 480 business connections. Facilities include a collection system with gravity sewers, lift stations, and a Wastewater Treatment Plant (WWTP).

KEY TERMS

Effluent: Effluent is an outflowing of water from a natural body of water, or from a man-made structure. Effluent in the man-made sense is generally considered to be water pollution, such as the outflow from a sewage treatment facility or the wastewater discharge from industrial facilities. In the context of waste water treatment plants, effluent that has been treated is sometimes called secondary effluent, or treated effluent.

NPDES: Water pollution degrades surface waters making them unsafe for drinking, fishing, swimming, and other activities. As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

WWTP: Wastewater treatment plant. Treatment of wastewater may include the following processes: screening to remove large waste items; grit removal to allow sand, gravel, and sediment to settle out; primary sedimentation where sludge can settle out of the wastewater; secondary treatment to substantially degrade the biological content of the sewage; tertiary treatment to raise the quality of the effluent before it is discharged; and, discharge.

WASTEWATER TREATMENT

The Public Works Department's Wastewater Division operates and maintains the City's Wastewater Treatment Plant (WWTP), a tertiary treatment plant that provides recycled water for a variety of landscape and industrial uses. The WWTP has an average dry weather flow capacity of 5 mgd and was designed to be expandable to an average dry weather flow capacity of 10 mgd. After wastewater is treated, it is normally discharged into Marsh Creek (a water of the United States and a tributary to the San Joaquin River/Delta) or recycled for irrigation (Bartle Wells Associates, 2007). Periodically, on-site percolation ponds may be used for land disposal of a limited amount of secondary treated effluent.

The WWTP was commissioned in 2003 and incorporates the following processes:

- headworks (screening and grit removal);
- two oxidation ditch activated sludge basins;
- two denitrification basins;
- two secondary clarifiers;
- two banks of two single media filters (a total of four filters);
- a chlorine contact chamber;
- dechlorination; and
- a cascade aeration system.

Biosolids are mixed with a polymer and then dewatered using one of two belt filter presses. Dewatered biosolids are hauled off-site to a local landfill.

Storm water runoff from the WWTP site is collected on-site and directed to a series of percolation ponds. At no point does storm water from the plant directly discharge into surface water.

WASTEWATER FLOWS

Wastewater flows are typically evaluated for several conditions, including:

- Average Dry Weather Flow (ADWF) – This is the flow rate that is considered to be the actual wastewater flow from homes and businesses in the community (although it may include some flow resulting from groundwater entering the sewer system). It is measured during the summer, when the weather is dry and there is minimal infiltration and no inflow. This flow is dependent on the number of residents and number and type of businesses within the community. It varies throughout the day, with the peak diurnal flow typically occurring in the morning as the community residents wake up and prepare for the day.
- Infiltration and Inflow (I&I) – This is flow that enters the sewer system from rainfall and from increased levels of groundwater caused by the rainfall or by seasonal variation of groundwater levels.
- Peak Hour Wet Weather Flow (PHWWF) – This is the sum of the peak WWF and the peak I&I. The PHWWF is the peak flow rate that is expected to occur during large storm events.

The average dry weather flow to the City's WWTP in 2012 was 3.4 mgd. The discharge permit defines an average daily discharge flow effluent limitation of 5.0 mgd, which is determined annually.

Effluent Discharge Permit

On January 25, 2008, the Central Valley RWQCB adopted Waste Discharge Requirements Order R5-2008-0006 (NPDES Permit) and Cease and Desist Order R5-2008-0007 (CDO), prescribing waste discharge requirements and compliance time schedules for the City of Brentwood Wastewater Treatment Plant. The Cease and Desist Order addressed compliance with newly imposed copper and effluent temperature requirements. The CDO was rescinded on December 6, 2012. The NPDES Permit expired on December 31, 2012, and the City has submitted a Report of Waste Discharge for permit renewal. The current NPDES Permit will continue in effect until the permit is renewed. The RWQCB staff anticipates renewal of the permit in the fall of 2013.

The NPDES permit contained, in part, final effluent limitations for chloride which could not be met by the existing facilities. The final effluent limitations for chloride were to become applicable to the discharge on January 1, 2013. However, Order R5-2012-0113, adopted on December 6, 2012, amended Waste Discharge Requirements Order R5-2008-0006, extending the compliance schedule for chloride by five years, to January 2018. In addition, the final effluent limits for chloride may change in the renewed permit expected in 2013 (RWQCB, 2012).

WASTEWATER COLLECTION SYSTEM

The City's wastewater collection system consists of approximately 188 miles of pipe, ranging from 4 inches to 42 inches in diameter, and two lift stations (Sellers & Dreamcatcher). The Sellers lift station was recently refurbished. The small Dreamcatcher lift station serves 20 homes and was acquired (but not yet accepted) by the City in 2007 in relatively new condition. The City maintains the collection system with the use of two combination trucks (suction and high pressure jet cleaning hoses) and a CCTV (Closed Circuit Television) van to inspect the sewer mains and laterals. The City also provides maintenance and emergency response services for the entire sewer system (City of Brentwood, 2012).

The City updated the Wastewater Collection System Master Plan in 2010. The previous Master Plan was prepared in 2001 following the adoption of the city's existing General Plan. An updated master plan was developed in 2006. The master plan and associated computer model includes all pipe sizes 12-inches in diameter and larger.

Sanitary sewer systems must be sized and designed to convey the peak hour wet weather flow to prevent sanitary sewer overflows. A computer model is used to simulate peak flows, based on an estimate of average dry weather flows, peaking factors, and estimates of infiltration and inflow. Average dry weather flows in the collection system are estimated using the following factors:

- Residential. 85 gallons/day/person and 2.86 persons/dwelling unit, equal to an average daily flow generation of 243 gpd/dwelling unit.
- Non-residential. 1,785 gal/day/acre, applicable to commercial, office, business park, and industrial uses.
- Public and semi-public facilities and schools. 895 gal/day/acre (The City of Brentwood, 2010).

SANITARY SEWER MANAGEMENT PLAN (SSMP)

Since 2010 there have been six small sanitary sewer overflows from the Brentwood sewer system. In May 2006, the State Water Resources Control Board (SWRCB) implemented Order No. 2006-0003-DWQ which requires, among other things, development and implementation of a system-specific SSMP. Brentwood's SSMP facilitates the overall management of the City's wastewater collection system. The SSMP is audited every two years and was revised in March 2013.

The main goal of the SSMP is to minimize the number and impact of Sanitary Sewer Overflows (SSOs). Other goals include:

- Maintain the existing infrastructure and plan for future CIP projects;
- Continue to provide capacity evaluation for the collection system and plan for future growth;
- Develop a plan to ensure an adequate number of staff to meet the obligations of the SSMP;
- Prevent public health hazards;
- Detect and reduce Inflow and Infiltration into the system; and
- Operate in a safe and efficient manner.

In the case of an SSO, a response plan has been prepared to protect public health and the environment, and to satisfy regulatory agencies and waste discharge permit conditions which address procedures for managing sewer overflows and minimizes risk of enforcement actions against the City of Brentwood (City of Brentwood, 2012).

PLANNED FUTURE INFRASTRUCTURE

As Brentwood continues to develop in the future, there will be an increased need for water and wastewater services, including a reliable source of recycled water. These needs have been addressed in the City's master plans and will require that the City continue to implement phased improvements to some pump stations, sewer mains, and the wastewater treatment plant when triggered by growth (Contra Costa LAFCO, 2007).

Wastewater infrastructure improvements currently included in the City's Capital Improvement Program (FY 2012/13 – 2016/17) are:

- Apple Hill Drive Sewer Diversion;
- City Wide Wastewater Rehabilitation;
- Lone Tree Way Sewer Interceptor;
- Marsh Creek Sewer Constriction Upgrade;

- Sewer Manhole Rehabilitation;
- Wastewater Treatment Plant Belt Filter Press;
- WWTP Effluent 3-Way Diversion Valve;
- Wastewater Treatment Plant Expansion - Phase II;
- Wastewater Treatment Plant Influent Bar-Screens; and
- Wastewater Treatment Plant - Solids System Expansion (City of Brentwood, 2012).

Preliminary planning of the Phase II expansion of the wastewater treatment plant has been completed. Final design and construction will not start until wastewater influent ADWF is 3.75 mgd (estimated to be 4-6 years from now), at which time it is expected that it will take about 2 years to construct the Phase II improvements. The project will expand capacity to 7.5 or 10.0 mgd by adding oxidation ditches, secondary clarifiers, filters, and related appurtenances (Contra Costa LAFCO, 2007).

REGULATORY SETTING - WASTEWATER

STATE

State Water Resources Control Board/Regional Water Quality Control Board

In California, all wastewater treatment and disposal systems fall under the overall regulatory authority of the State Water Resources Control Board (SWRCB) and the nine California Regional Water Quality Control Boards (RWQCBs), who are charged with the responsibility of protecting beneficial uses of state waters (ground and surface) from a variety of waste discharges, including wastewater from individual and municipal systems. The City of Brentwood falls within the jurisdiction of the Central Valley RWQCB.

The RWQCB's regulatory role often involves the formation and implementation of basic water protection policies. These are reflected in the individual RWQCB's Basin Plan, generally in the form of guidelines, criteria and/or prohibitions related to the siting, design, construction, and maintenance of on-site sewage disposal systems. The SWRCB's role has historically been one of providing overall policy direction, organizational and technical assistance, and a communications link to the state legislature.

The RWQCBs may waive or delegate regulatory authority for on-site sewage disposal systems to counties, cities or special districts. Although not mandatory, it is commonly done and has proven to be administratively efficient. In some cases this is accomplished through a Memorandum of Understanding (MOU), whereby the local agency commits to enforcing the Basin Plan requirements or other specified standards that may be more restrictive. The RWQCBs generally elect to retain permitting authority over large and/or commercial or industrial on-site sewage disposal systems, depending on the volume and character of the wastewater.

LOCAL

City of Brentwood Wastewater Collection System Master Plan (2010)

The City's 2010 Wastewater Collection System Master Plan includes a description and maps of the City's wastewater collection system, system-wide flow projections, hydraulic models of system flows, an analysis of the system's capacity, a summary of system capacity improvements that are needed, and a summary of the current related CIP schedule and costs for wastewater system improvements.

City of Brentwood Sewer System Management Plan (2013)

In May 2006, the State Water Resources Control Board (SWRCB) implemented Order No. 2006-0003-DWQ. Any municipality that owns or operates a sanitary sewer system greater than 1.0 mile in length and that collects and/or conveys untreated or partially treated wastewater to publicly owned treatment plants in the State of California is required to comply with the terms of this order. This order requires the development and implementation of a system-specific Sanitary Sewer Management Plan (SSMP). The City's SSMP facilitates the overall management of the City of Brentwood's sewer system.

The SSMP is intended to meet the requirements of the Statewide General Waste Discharge Requirements (GWDR). The SSMP includes eleven elements, as listed below:

1. Goals;
2. Organization;
3. Legal Authority;
4. Measures and Activities (Operation and Maintenance Program);
5. Design and Construction Standards (Design and Performance Provisions);
6. Overflow Emergency Response Plan;
7. Fats, Oils and Grease Control Program;
8. Capacity Management (System Evaluation and Capacity Assurance Plan);
9. Monitoring, Measurement, and Program Modification;
10. SSMP Audits; and
11. Communication Plan.

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on the environment associated with Utilities if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- Result in a determination by the wastewater treatment provider which serves or may serve the project that is has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

IMPACTS AND MITIGATION MEASURES

Impact 3.14-3: General Plan implementation has the potential to exceed wastewater treatment capacity or the requirements of the RWQCB (Less than Significant)

The Public Works Department's Wastewater Division operates and maintains the City's WWTP, a tertiary treatment plant that provides recycled water for a variety of landscape and industrial uses. The WWTP has an average dry weather flow capacity of 5 mgd and was designed to be expandable to an average dry weather flow capacity of 10 mgd. The average dry weather flow to the City's WWTP in 2012 was 3.4 mgd. The discharge permit defines an average daily discharge flow effluent limitation of 5.0 mgd, which is determined annually.

As Brentwood continues to develop in the future, there will be an increased need for water and wastewater services, including a reliable source of recycled water. These needs have been addressed in the City's master plans and will require that the City continue to implement phased improvements to some pump stations, sewer mains, and the wastewater treatment plant when triggered by growth.

Wastewater infrastructure improvements currently included in the City's Capital Improvement Program (FY 2012/13 – 2016/17) are:

- Apple Hill Drive Sewer Diversion;
- City Wide Wastewater Rehabilitation;
- Lone Tree Way Sewer Interceptor;
- Marsh Creek Sewer Constriction Upgrade;
- Sewer Manhole Rehabilitation;

- Wastewater Treatment Plant Belt Filter Press;
- WWTP Effluent 3-Way Diversion Valve;
- Wastewater Treatment Plant Expansion - Phase II;
- Wastewater Treatment Plant Influent Bar-Screens; and
- Wastewater Treatment Plant - Solids System Expansion (City of Brentwood, 2012).

Preliminary planning of the Phase II expansion of the wastewater treatment plant has been completed. Final design and construction will not start until wastewater influent ADWF is 3.75 mgd, at which time it is expected that it will take about 2 years to construct the Phase II improvements. The project will expand capacity to 7.5 or 10.0 mgd by adding oxidation ditches, secondary clarifiers, filters, and related appurtenances.

System-wide wastewater flow projections are contained in the 2010 Update to the Wastewater Collection System Master Plan (City of Brentwood, 2012). System-wide flow projections are based on the land use classifications shown on the City's existing General Plan. Special Planning Areas (SPA) R, G, H, S, and J, as shown on the existing General Plan Land Use Map, are included in the master plan flow projection tables for the ultimate system.

Flow generation values and peaking factors for Peak Dry Weather (PDWF) and Peak Wet Weather (PWWF) flows were developed based on recorded flows at the WWTP, and the water usage information generated for the Water System Master Plan prepared for the City in 2006. Wet weather flow monitoring from pumping records at the WWTP provided information used to develop the factors for Peak Dry Weather (PDWF), and Peak Wet Weather flows plus inflow and infiltration (PWWF).

The wastewater flow generation rate used in the Wastewater Collection System Master Plan Update were based on 85 gallons per day per person, and the analysis assumed a General Plan buildout population within the city limits of 80,762. For non-residential land uses, including commercial, office, business park, and industrial uses, the flow generation rate was projected at 1,785 gallons per day per acre. Schools, as well as public and semi-public facilities, were projected at 895 gallons per day per acre. As described in the 2012 Wastewater Collection System Master Plan Update, the Average Dry Weather Flow at the WWTP would be between 10.2 mgd and 12.5 mgd upon full buildout of the existing General Plan.

As shown in Table 2.0-3, the proposed General Plan would result in a buildout population of 80,917 within the city limits, which is nearly identical to the projected buildout population used in the wastewater flow projections contained in the 2012 Wastewater Collection System Master Plan Update.

The generation of 10.2 to 12.5 mgd associated with General Plan buildout within the city limits is above the projected treatment capacity of the City's WWTP, following completion of the capacity expansion improvements described previously in this section. Additionally, the City's existing waste discharge permit would need to be revised to accommodate the increased demand for

wastewater treatment. Additional development would require expansions to the WWTP in order to accommodate full buildout of the General Plan throughout the Planning Area.

General Plan Policy IF 1-2 requires development, infrastructure, and long-term planning projects to be consistent with all applicable City infrastructure plans, including the Water Master Plan, the Wastewater Master Plan, and the Capital Improvement Program. Policy IF 1-3 requires all development projects to mitigate their infrastructure service impacts or demonstrate that the City's infrastructure, public services, and utilities can accommodate the increased demand for services, and that service levels for existing users will not be degraded or impaired.

Action IF 1a requires the City to periodically review and update the various City master plans for the provision and/or extension of public services to serve existing and future development. These plans include, but are not limited to, the Water Master Plan, the Wastewater Master Plan, and the Capital Improvement Program. Additionally, Action IF 3a specifically requires the City to periodically review and update the Wastewater Master Plan.

While full buildout of the proposed General Plan would slightly exceed the existing treatment capacity of the WWTP, the proposed General Plan includes provisions to ensure that new development cannot be approved until it can be demonstrated that adequate capacity is available to serve it. As described above, the City must also periodically review and update the Wastewater Master Plan, and as growth continues to occur within the Planning Area, the City will identify necessary system upgrades and capacity enhancements to meet growth, prior to the approval of new development.

Given that projected wastewater generation volumes associated with General Plan buildout would not exceed the projected wastewater generation volumes described in the 2012 Brentwood Wastewater Collection System Master Plan Update, and that the proposed General Plan includes a comprehensive set of goals, policies, and actions to ensure an adequate and reliable wastewater collection and treatment system, impacts associated with wastewater treatment and compliance with waste discharge requirements are **less than significant.** The policies and actions listed below would further assist in ensuring that adequate wastewater treatment and conveyance infrastructure is available to serve new growth projected under the proposed General Plan.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy IF 1-1: Provide adequate public infrastructure (i.e., street, sewer, water, and storm drain) to meet the needs of existing and future development.

Policy IF 1-2: Require development, infrastructure, and long-term planning projects to be consistent with all applicable City infrastructure plans, including the Water Master Plan, the Wastewater Master Plan, and the Capital Improvement Program.

Policy IF 1-3: Require all development projects to mitigate their infrastructure service impacts or demonstrate that the City's infrastructure, public services, and utilities can accommodate the

increased demand for services, and that service levels for existing users will not be degraded or impaired.

Policy IF 1-4: Require new development projects to develop comprehensive infrastructure plans for City review and approval as part of an application submittal.

Policy IF 1-5: When appropriate, require development projects to install off-site infrastructure subject to the City's Development Fee Program.

Policy IF 1-6: Prioritize infrastructure improvements to areas identified for economic growth in the next 5-10 years.

Policy IF 1-7: Require the payment of impact fees for all new development.

Policy IF 3-1: Ensure adequate sewage conveyance and treatment infrastructure to meet existing and future development.

Policy IF 3-2: Maintain the existing wastewater system on a regular basis to increase the lifespan of the system and ensure public safety.

ACTIONS

Action IF 1a: Periodically review and update the various City master plans for the provision and/or extension of public services to serve existing and future development. These plans include, but are not limited to, the Water Master Plan, the Wastewater Master Plan, and the Capital Improvement Program.

Action IF 1b: Develop and regularly update a comprehensive plan which establishes priorities and corrects existing inadequacies in the City's infrastructure system.

Action IF 1c: As part of the development review process, determine the potential impacts of development and infrastructure projects on public infrastructure, and ensure that new development contributes its fair share toward necessary on and off-site infrastructure, as described in the Growth Management Element of the General Plan.

Action IF 1d: Through development review, ensure that infrastructure is adequately sized to accommodate the proposed development and, if applicable, allow for extensions to future developments.

Action IF 1e: Identify and apply for Federal, State, and regional funding sources set aside to finance infrastructure costs.

Action IF 1f: Develop and regularly update a comprehensive financing plan to accommodate the construction of master planned infrastructure.

Action IF 3a: Periodically review and update the Wastewater Master Plan.

Action IF 3b: Continue to explore alternative uses of recycled wastewater, including irrigation, dust control, soil compaction, fire protection, and investigate new technology for the use of recycled water as it is being developed.

Impact 3.14-4: General Plan implementation may require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (Less than Significant)

Development under the proposed General Plan would result in increased wastewater flows, resulting in the need for additional or expanded wastewater treatment facilities and conveyance infrastructure, as described above.

The infrastructure and facilities necessary to serve new growth would involve development of some facilities on-site, some facilities off-site on appropriately designated land, and may also involve improvements to existing facilities and disturbance of existing rights-of-way. The specific impacts of providing new and expanded facilities cannot be determined at this time, as the General Plan does not propose development nor does it designate specific sites for new or expanded public facilities.

Wastewater treatment and conveyance facilities would be evaluated at the project-level in association with subsequent development projects. However, the facilities would be primarily provided on sites with land use designations that allow such uses and the environmental impacts of constructing and operating the facilities would likely be similar to those associated with new development, redevelopment, and infrastructure projects under the General Plan. Impacts associated with construction activities may include air quality, drainage, and noise, and impacts associated with operation including traffic, noise, air quality, hazards, and land stability. These impacts would generally occur as described in the relevant chapters (Chapters 3.1 through 3.14, and 4.0) of this Draft EIR. Other impacts that may occur include short-term direct visual impacts associated with construction activities; potential direct impacts on a variety of biological resources, including wetlands and riparian resources; loss of trees and other sensitive habitats; and loss or disturbance of special status plant and animal species. Additionally, air quality emissions of particulate matter, greenhouse gases, oxides of nitrogen, and reactive organic gases may be generated. Where potentially significant or significant impacts are identified, this Draft EIR identifies mitigation measures in the relevant chapter to reduce the impacts and discloses which impacts cannot be reduced to less than significant levels.

As future development and infrastructure projects are considered by the City, each project will be evaluated for conformance with the General Plan, Municipal Code, and other applicable regulations. Subsequent development and infrastructure projects would also be analyzed for potential environmental impacts, consistent with the requirements of CEQA.

The proposed General Plan includes policies and actions designed to ensure adequate wastewater treatment capacity is available to serve development, to minimize the potential adverse effects of wastewater treatment, and to ensure that development does not move forward until adequate wastewater capacity exists. Policy IF 1-3 requires all development projects to mitigate their infrastructure service impacts or demonstrate that the City's infrastructure, public services, and utilities can accommodate the increased demand for services, and that service levels for existing users will not be degraded or impaired. Policy IF 1-7 and Action IF 1f provide assurances that

adequate funding will be available, through the payment of fair-share development infrastructure fees, to provide necessary improvements and ensure coordination with wastewater treatment providers to plan for necessary improvements to accommodate growth. This is a **less than significant** impact.

3.14.3 STORMWATER DRAINAGE

The information in this section focuses on the potential for the General Plan to result in the demand for new or expanded stormwater drainage facilities. Section 3.9 (Hydrology and Water Quality) includes an expanded analysis of water quality, flooding, and other stormwater related issues.

CREEKS AND FLOOD CONTROL FACILITIES

Brentwood is almost completely within the Marsh Creek Watershed. The watershed includes 60,000 acres of urban, scenic hills, and rural/agricultural land. The watershed has about 15% impervious coverage. The watershed extends from the eastern side of the Mount Diablo foothills downstream to the San Joaquin River Delta at Big Break. The average annual rainfall for this watershed is 17 inches (CCCCDP Nov 2003). The average annual rainfall for the city of Brentwood is approximately 12 inches (CCCPWD).

The largest creek draining this watershed is Marsh Creek, which generally flows from the east to the west near the southern boundary of the watershed and from the south to the north near the eastern boundary of the watershed. Marsh Creek flows from the south to the north through the center of Brentwood. Within the city, the upstream segment (southern quarter) of the creek is still a natural creek; however, the downstream segment of the creek has been converted from a natural creek to a flood control channel (CCCCDP 2003). The Marsh Creek Reservoir and Dam are owned and operated by the Contra Costa County Flood Control and Water Conservation District (CCCFCWCD) (Consolacion, 2013). The dam reduces the flow rate in Marsh Creek, thereby reducing the potential for flooding along the creek within the city of Brentwood. Dry Creek, Deer Creek, and Sand Creek each flow from the west to the east and join Marsh Creek within the city of Brentwood.

Dry Creek is located in the southern portion of the city, and is about 5.8 miles in length (CCCCDP 2003). The Dry Creek Reservoir is located along Dry Creek near the west boundary of the city. The Dry Creek Basin is located along the creek within the city in Creekside Park (Consolacion, 2013). Each of these facilities reduces the flow in Dry Creek, thereby reducing the potential for flooding downstream from the facility.

Deer Creek is located north of Dry Creek. Deer Creek is about nine miles long (CCCCDP 2003). Within the city, the western segment of Deer Creek is still a natural creek; but the eastern segment of Deer Creek has been converted from a natural creek to a flood control channel. The Deer Creek Reservoir is located along Deer Creek west of the city of Brentwood (Consolacion, 2013). The Deer Creek Basin is located within the city near the intersection of Buena Vista Street and Fairview

Avenue. Each of these facilities reduce the flow in Deer Creek, thereby reducing the potential for flooding downstream of the facility.

Sand Creek is located north of Deer Creek near the center of the city. Sand Creek is about 19 miles long (CCCCDP 2003). Within the city, the eastern segment of Sand Creek has been converted to a flood control channel.. The Upper Sand Creek Basin is located along Sand Creek west of the city (Consolacion, 2013). The Lower Sand Creek Basin is located within the city near the intersection north of Sand Creek Road and east of Highland Road. The CCCFCWCD is currently in the process of designing and constructing an expansion of the Upper Sand Creek Basin so that it will provide a greater level of downstream flood protection. Each of these facilities reduce the flow in Sand Creek, thereby reducing the potential for flooding downstream of the facility.

The City of Brentwood owns and operates most of the smaller storm drainage systems within the city. Additionally, the City owns two detention basins in The Vineyards subdivision. There are no stormwater pump stations within the city. In addition to the major CCCFCWCD facilities described above, the CCCFCWCD also owns several trunk storm drains and smaller detention basin facilities (Consolacion, 2013). The storm drains generally range in size from 24-inches to 72-inches in diameter. The smaller detention basins provide up to about 125 acre-feet of runoff storage.

REGULATORY SETTING- STORMWATER DRAINAGE

FEDERAL

Clean Water Act (CWA)

The CWA, initially passed in 1972, regulates the discharge of pollutants into watersheds throughout the nation. Section 402(p) of the act establishes a framework for regulating municipal and industrial stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) Program. Section 402(p) requires that stormwater associated with industrial activity that discharges either directly to surface waters or indirectly through municipal separate storm sewers must be regulated by an NPDES permit.

The State Water Resources Control Board (SWRCB) is responsible for implementing the Clean Water Act and does so through issuing NPDES permits to cities and counties through regional water quality control boards. Federal regulations allow two permitting options for storm water discharges (individual permits and general permits). The SWRCB elected to adopt a statewide general permit (Water Quality Order No. 2003-0005-DWQ) for small Municipal Separate Storm Sewer Systems (MS4s) covered under the CWA to efficiently regulate numerous storm water discharges under a single permit, however, this does not apply to Brentwood. The Central Valley RWQCB has issued a large municipality permit to cities in Contra Costa County, including Antioch, Brentwood, and Oakley, as well as unincorporated portions in the east County (WDR Order R-5-2010-2012, NPDES Permit No. CA5083313, 9/23/10). Permittees must meet the requirements in Provision D of the General Permit, which require the development and implementation of a Storm Water Management Plan (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable. The SWMP must include the following six minimum control measures:

1. Public Education and Outreach on Storm Water Impacts;
2. Public Involvement/Participation;
3. Illicit Discharge Detection and Elimination;
4. Construction Site Storm Water Runoff Control;
5. Post-Construction Storm Water Management in New Development; and
6. Redevelopment and Pollution Prevention/Good Housekeeping for Municipal Operations.

National Pollutant Discharge Elimination System (NPDES)

National Pollutant Discharge Elimination System (NPDES) permits are required for discharges to navigable waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, oceans, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. NPDES permits are issued under the Federal Clean Water Act, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.)

The RWQCB issues these permits in lieu of direct issuance by the Environmental Protection Agency, subject to review and approval by the EPA Regional Administrator (EPA Region 9). The terms of these NPDES permits implement pertinent provisions of the Federal Clean Water Act and the Act's implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries, and anti-degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable so as to achieve the Clean Water Act's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the CWA.

These NPDES permits regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. NPDES permits are issued for five years or less, and therefore must be updated regularly. The rapid and dramatic population and urban growth in the Central Valley Region has caused a significant increase in NPDES permit applications for new waste discharges. To expedite the permit issuance process, the RWQCB has adopted several general NPDES permits, each of which regulates numerous discharges of similar types of wastes. The SWRCB has issued general permits for stormwater runoff from construction sites statewide. Stormwater discharges from industrial and construction activities in the Central Valley Region can be covered under these general permits, which are administered jointly by the SWRCB and RWQCB.

STATE

California Water Code

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Division 7 of the California Water Code) (Porter-Cologne Act). The Porter-Cologne Act grants the SWRCB and each of the Regional Water Quality Control Boards (RWQCBs) power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the

Federal Clean Water Act. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a Water Quality Control Plan (Basin Plan) for its region. The regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

Water Quality Control Plan for the Sacramento and San Joaquin River Basins

The Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan) includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The term "water quality standards," as used in the Federal Clean Water Act, includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain the water quality standards.

The RWQCB regulates waste discharges to minimize and control their effects on the quality of the region's ground and surface water. Permits are issued under a number of programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. The Basin Plan reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code and the Clean Water Act.

LOCAL

Contra Costa Clean Water Program

To comply with the Federal Clean Water Act, Contra Costa County, its 19 incorporated cities, and the Contra Costa County Flood Control & Water Conservation District have joined together to form the Contra Costa Clean Water Program (CCCWP). The CCCWP strives to eliminate stormwater pollution through public education, inspection and enforcement activities, and industrial outreach. The Contra Costa Clean Water Program is dedicated to maintaining a healthy environment in Contra Costa's creeks, rivers, the Delta, and the Bay.

East Contra Costa County Municipal NPDES Permit Waste Discharge Requirements Order R5-2010-0102 NPDES Permit No. CAS083313 23 September 2010

In response to the Federal Clean Water Act, the Contra Costa Clean Water Program regulates waste dischargers under a National Pollutant Discharge Elimination System (NPDES) Permit administered by the appropriate Regional Water Quality Control Board. Specifically, the municipalities are regulated with regard to their jurisdiction over and/or maintenance responsibility for municipal storm drain systems and watercourses that they own or operate. The NPDES Permit is concerned primarily with regulating trash, pollutants of concern, and excessive hydrologic runoff which can carry sediment and cause flooding.

Contra Costa Clean Water Program Stormwater Management Plan 1999-2004

This Stormwater Management Plan (SWMP) serves as the basis for the Contra Costa Clean Water Program's National Pollutant Discharge Elimination System (NPDES) Permit application to the Central Valley Regional Water Quality Control Board.

Start at the Source: Design Guidance Manual for Stormwater Quality Protection

This document is intended for use in the planning and design phases of residential, commercial, institutional, and industrial development and redevelopment. It recognizes that one of the best opportunities to reduce the generation of urban runoff or “nonpoint source pollution” from development is through planning and design. This document provides Best Management Practices including principles and techniques for basic siting and design considerations, construction phase strategies, and post construction property management practices.

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on the environment associated with Utilities if it would:

1. 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.

IMPACTS AND MITIGATION MEASURES

Impact 3.14-5: Implementation of the General Plan may result in new or expanded stormwater drainage facilities (Less than Significant)

Development under the proposed General Plan would result in increased areas of impervious surfaces throughout the Planning Area, resulting in the need for additional or expanded stormwater drainage, conveyance, and retention infrastructure.

The infrastructure and facilities necessary to serve new growth would involve development of some facilities on-site, some facilities off-site on appropriately designated land, and may also involve improvements to existing facilities and disturbance of existing rights-of-way. The specific impacts of providing new and expanded drainage facilities cannot be determined at this time, as the General Plan does not propose development nor does it designate specific sites for new or expanded public facilities.

Stormwater drainage and conveyance facilities would be evaluated at the project-level in association with subsequent development projects. However, the facilities would be primarily provided on sites with land use designations that allow such uses and the environmental impacts of constructing and operating the facilities would likely be similar to those associated with new development, redevelopment, and infrastructure projects under the General Plan. Impacts associated with construction activities may include air quality, drainage, and noise, and impacts associated with operation including traffic, noise, air quality, hazards, and land stability. These impacts would generally occur as described in the relevant chapters (Chapters 3.1 through 3.14, and 4.0) of this Draft EIR. Other impacts that may occur include short-term direct visual impacts associated with construction activities; potential direct impacts on a variety of biological resources, including wetlands and riparian resources; loss of trees and other sensitive habitats; and loss or disturbance of special status plant and animal species. Additionally, air quality emissions of particulate matter, greenhouse gases, oxides of nitrogen, and reactive organic gases may be generated. Where potentially significant or significant impacts are identified, this Draft EIR identifies mitigation measures in the relevant chapter to reduce the impacts and discloses which impacts cannot be reduced to less than significant levels.

As future development and infrastructure projects are considered by the City, each project will be evaluated for conformance with the General Plan, Municipal Code, and other applicable regulations. Subsequent development and infrastructure projects would also be analyzed for potential environmental impacts, consistent with the requirements of CEQA.

The proposed General Plan includes policies and actions designed to ensure adequate drainage infrastructure is available to serve development, to minimize the potential adverse effects of stormwater conveyance, and to ensure that development does not move forward until adequate drainage capacity exists. Policy IF 4-3 requires all development projects to demonstrate how storm water runoff will be detained or retained on-site and/or conveyed to the nearest drainage facility as part of the development review process and as required by the City's NPDES Municipal Regional Permit. Project applicants are required to mitigate any drainage impacts as necessary. Policy IF 4-4 requires the City to maintain drainage channels in a naturalized condition to the greatest extent feasible, subject to health and safety requirements and as otherwise described in the Conservation and Open Space Element. This policy would help ensure that future drainage facility infrastructure is integrated into the natural environment to the greatest extent feasible.

The policies and actions listed below would ensure that there is adequate stormwater drainage and flood control infrastructure to serve future development under the General Plan, and would ensure that future drainage and flood control infrastructure projects do not result in adverse environmental impacts. This is a **less than significant** impact.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy IF 1-1: Provide adequate public infrastructure (i.e., street, sewer, water, and storm drain) to meet the needs of existing and future development.

Policy IF 1-2: Require development, infrastructure, and long-term planning projects to be consistent with all applicable City infrastructure plans, including the Water Master Plan, the Wastewater Master Plan, and the Capital Improvement Program.

Policy IF 1-3: Require all development projects to mitigate their infrastructure service impacts or demonstrate that the City's infrastructure, public services, and utilities can accommodate the increased demand for services, and that service levels for existing users will not be degraded or impaired.

Policy IF 1-4: Require new development projects to develop comprehensive infrastructure plans for City review and approval as part of an application submittal.

Policy IF 1-5: When appropriate, require development projects to install off-site infrastructure subject to the City's Development Fee Program.

Policy IF 4-1: Maintain and improve Brentwood's storm drainage facilities.

Policy IF 4-2: Incorporate recreational trails and parkway vegetation design in channel improvements, and explore utilizing detention basins for parks, ball fields, and equestrian areas.

Policy IF 4-3: Require all development projects to demonstrate how storm water runoff will be detained or retained on-site and/or conveyed to the nearest drainage facility as part of the development review process and as required by the City's NPDES Municipal Regional Permit. Project applicants shall mitigate any drainage impacts as necessary.

Policy IF 4-4: Maintain drainage channels in a naturalized condition to the greatest extent feasible, subject to health and safety requirements and as otherwise described in the Conservation and Open Space Element of the General Plan.

Policy IF 4-5: Continue to work cooperatively with outside agencies such as the Contra Costa County Flood Control & Water Conservation District regarding storm drainage issues.

Policy COS 3-4: Conserve existing native vegetation where possible and integrate regionally native plant species into development and infrastructure projects where appropriate.

Policy COS 4-1: Where feasible, protect and enhance surface water quality in creeks, streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat, and vernal pools through sound land use planning, community design, and site planning.

Policy COS 4-2: Rehabilitate existing channelized waterways, as feasible, to remove concrete linings and allow for a connection with the stream channel and the natural water table. Avoid creating additional channelized waterways, unless no other alternative is available to protect human health, safety, and welfare.

Policy COS 4-3: Where feasible, restore existing channelized waterways to a more natural condition. Restoration efforts should provide for naturalized hydraulic functioning. Restoration should also promote the growth of riparian vegetation to effectively stabilize banks, screen pollutants from runoff entering the channel, enhance fisheries, and provide other opportunities for natural habitat restoration.

Policy COS 4-4: Require discretionary projects, as well as new flood control and storm water conveyance projects, to integrate best management practices and natural features to the greatest extent feasible, while ensuring that these features adequately convey and control storm water to protect human health, safety, and welfare.

Policy COS 4-5: Encourage the use of natural features such as bio swales, vegetation, retention ponds, and other measures to remove storm water pollutants prior to discharge, subject to State regulations.

Policy COS 4-6: Where feasible, new development adjacent to creeks and streams should include opportunities for beneficial uses, such as flood control, ecological restoration, public access trails, and walkways.

Policy COS 4-7: Consult with State and Federal agencies during the development review process to help identify wetland and riparian habitat that has candidacy for restoration, conservation, and/or mitigation. Focus restoration and/or conservation efforts on areas that would maximize multiple beneficial uses for such habitat.

Policy COS 4-8: Conserve riparian habitat along local creeks, including but not limited to Marsh Creek, Deer Creek, Dry Creek, and Sand Creek, in order to maintain water quality and provide suitable habitat for native fish and plant species.

Policy COS 4-9: Consider the effects of development on ground and surface water quality, and implement measures to reduce water contamination.

Policy COS 4-10: Where feasible, encourage and support multipurpose detention basins that provide water quality protection, storm water detention, open space amenities, and recreational amenities.

ACTIONS

Action IF 1a: Periodically review and update the various City master plans for the provision and/or extension of public services to serve existing and future development. These plans include, but are not limited to, the Water Master Plan, the Wastewater Master Plan, and the Capital Improvement Program.

Action IF 1b: Develop and regularly update a comprehensive plan which establishes priorities and corrects existing inadequacies in the City's infrastructure system.

Action IF 1c: As part of the development review process, determine the potential impacts of development and infrastructure projects on public infrastructure, and ensure that new development contributes its fair share toward necessary on and off-site infrastructure, as described in the Growth Management Element of the General Plan.

Action IF 1d: Through development review, ensure that infrastructure is adequately sized to accommodate the proposed development and, if applicable, allow for extensions to future developments.

Action IF 1e: Identify and apply for Federal, State, and regional funding sources set aside to finance infrastructure costs.

Action IF 1f: Develop and regularly update a comprehensive financing plan to accommodate the construction of master planned infrastructure.

Action COS 3a: Require new development, as well as infrastructure projects, long-range planning projects, and other projects, to comply with the requirements of the East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan to ensure that potentially significant impacts to special-status species and sensitive resources are adequately addressed.

Action COS 4b: Continue to identify which storm water and drainage facilities are in need of repair and address these needs through the City's Capital Improvement Program.

Action COS 4c: Utilize existing regulations and procedures, including but not limited to, the Zoning Ordinance and the environmental review process, in order to conserve wetlands and riparian habitat within the city limits and the Planning Area.

Action COS 4d: Coordinate with the California Department of Fish and Wildlife, Contra Costa County, and local watershed protection groups to identify potentially impacted aquatic habitat within Brentwood's Planning Area and to develop riparian management guidelines to be implemented by development, recreation, and other projects adjacent to creeks, streams, and other waterways.

Action COS 4e: Continue to implement, and periodically review/update as necessary, Chapter 15.52 (Grading, Erosion and Sediment Control) of the Brentwood Municipal Code. The City shall review projects to ensure that best management practices are implemented during construction and site grading activities, as well as in project design to reduce pollutant runoff into water bodies.

Action COS 4f: Explore revising Title 17 (Zoning) of the Brentwood Municipal Code to include standards for creek setbacks and the protection of riparian habitat along creek corridors. The standards should include minimum setback requirements, site design standards, and requirements for the ongoing maintenance of creek and riparian habitat on public and private lands.

3.14.4 SOLID WASTE

The City of Brentwood is responsible for all solid waste collection within the city limits. The City owns and operates a Solid Waste Transfer Station located at 2301 Elkins Way, in the northeastern area of the city. The facility at 2301 Elkins Way is a new transfer station that opened on March 3, 2014, and replaces the original 15-year old transfer station, which will be demolished and converted to an overflow parking lot for Sunset Park. The new transfer station is permitted and is now active and operational.

Solid waste collection in the unincorporated areas of Brentwood, outside of the city limits, is handled by a private garbage collection company.

KEY TERMS

Class I landfill: A landfill that accepts for disposal 20 tons or more of municipal solid waste daily (based on an annual average); or one that does not qualify as a Class II or Class III municipal solid waste landfill.

Class II landfill: A landfill that (1) accepts less than 20 tons daily of municipal solid waste (based on an annual average); (2) is located on a site where there is no evidence of groundwater pollution caused or contributed by the landfill; (3) is not connected by road to a Class I municipal solid waste landfill, or, if connected by road, is located more than 50 miles from a Class I municipal solid waste landfill; and (4) serves a community that experiences (for at least three months each year) an interruption in access to surface transportation, preventing access to a Class I landfill, or a community with no practicable waste management alternative.

Class III landfill: A landfill that is not connected by road to a Class I landfill or a landfill that is located at least 50 miles from a Class I landfill. Class III landfills can accept no more than an average of one ton daily of ash from incinerated municipal solid waste or less than five tons daily of municipal solid waste.

Transfer station: A facility for the temporary deposition of some wastes. Transfer stations are often used as places where local waste collection vehicles will deposit their waste cargo prior to loading into larger vehicles. These larger vehicles will transport the waste to the end point of disposal or treatment.

Waste Management Plan: A Waste Management Plan (WMP) is a completed WMP form, approved by the City for the purpose of compliance with Chapter 8.40 of the Brentwood Municipal Code, submitted by the applicant for any covered project. Prior to project start, the WMP shall identify the types of construction and demolition (C&D) debris materials that will be generated for

disposal and recycling. A completed WMP contains actual weight or volume of the material disposed recycled receipts.

WASTE COLLECTION SERVICES

The Public Works Department's Solid Waste Division provides garbage, yard waste, and recycling collection services to residents and businesses within the Brentwood city limits. Residential garbage, yard waste, and recycling collection occurs Monday through Friday. Residential garbage is collected once per week, while yard waste and recycling are collected every-other week on an alternating schedule. Residential solid waste collection fees are based on the garbage cart size selected by the customer (32 gallon, 64 gallon, or 96 gallon), and may include up to two each of the recycling and yard waste carts, which are serviced every other week at no additional charge.

Commercial customers can establish a customized garbage collection schedule that includes a range of container sizes and collection frequencies. Commercial customers using cart services (garbage cans) can arrange for multiple service pickups per week. Commercial front-load bins ranging in size from 1 yard to 40 yards are also available for garbage, mixed recyclables, and cardboard only. Commercial and residential customers can also arrange for extra non-scheduled waste pickup services from the City at an additional charge.

WASTE DISPOSAL FACILITIES

Brentwood Solid Waste Transfer Station

The City of Brentwood owns and operates a solid waste transfer station with a permitted capacity to handle 400 tons per day of municipal solid waste (MSW). The transfer facility is located on approximately 5.7 acres at 2301 Elkins Way, in the northeastern area of the city. The transfer station is permitted to accommodate up to 200 vehicles, plus 25 transfer trucks, per day.

All the MSW collected by the City goes to this transfer station. The MSW delivered to the transfer station is checked for potentially hazardous waste material, and transferred onto larger trucks for ultimate disposal at a sanitary landfill or processed elsewhere. The City of Brentwood presently disposes and/or processes MSW (garbage, recycling, and green waste) at the Keller Canyon County Landfill within the City of Pittsburg, operated by Allied Waste Systems Republic Services. On March 11, 2008, by Resolution No. 2008-65, the City Council approved an Agreement with the Keller Canyon Landfill Company for Solid Waste, Green Waste and Recyclable Materials Transport, Processing and Disposal Services and a Guaranty Agreement with Allied Waste Services of North America.

The City operates a program to recycle large household appliances dropped off at the transfer station with appropriate handling of hazardous and potentially hazardous materials, such as freon, by a licensed contractor to the City. The Brentwood transfer station is not used to collect, store, or process household hazardous waste, other than the limited quantities that may be inadvertently picked up in City collection trucks. City collection crews have primary responsibility for inspecting loads prior to transferring into collection trucks.

The City recently completed the process of expanding and replacing the original Solid Waste Transfer Station by constructing a new one including, but not limited to, an expanded covered transfer floor area; transfer truck loading areas; cart, bin, and roll off storage; equipment parking; administrative offices; staff offices and related facilities. Construction was completed in 2013, and the facility began operations at 2301 Elkins Way on March 3, 2014.

Keller Canyon County Landfill

The Keller Canyon Landfill opened on May 7, 1992 as a Class II Landfill operating under permit number 07-AA-0032. The facility accepts municipal solid waste, non-liquid industrial waste, contaminated soils, ash, grit, and sludges. Keller Canyon Landfill is closed to the public.

Keller Canyon Landfill covers 2,600 acres of land; 244 acres are permitted for disposal. The site currently handles 2,500 tons of waste per day, although the permit allows up to 3,500 tons of waste per day to be managed at the facility. According to the CalRecycle Solid Waste Facility Permit (07-AA-0032), as of September 2008, the remaining capacity of the landfill's disposal area is estimated at 60-64 million cubic yards, and the estimated closing date for the landfill is 2050.

The composite liner system at the landfill was designed to meet or exceed all State and Federal regulations. The containment system consists of two feet of compacted clay with a maximum permeability of 1x10 -7 cm/sec covered by an 80-mil-thick high-density polyethylene (HDPE) textured geomembrane. Beneath the liner system is a one-foot thick layer of sand that intercepts groundwater and conveys it to an adjacent wetlands mitigation area. The leachate collection and removal system is located directly on top of the composite liner. This system consists of a 12 oz/yd 2-cushion geotextile, a 1-foot-thick granular layer and a 6 oz/yd 2 filter geotextile. HDPE pipes are located within the granular layer to increase the system's efficiency.

The groundwater monitoring system at the landfill consists of 24 wells, 19 piezometers and 4 springs which are sampled or measured monthly, quarterly, or annually. Leachate is sampled from the leachate holding tanks after 50,000 gallons have accumulated. The site has a sedimentation basin that is monitored during and after each rainfall or quarterly, whichever is greater. Radiation is monitored by radiation detectors located at the scalehouse. Landfill gas monitoring probes are located at 29 positions around the perimeter of the site.

HAZARDOUS WASTE DISPOSAL

The City of Brentwood maintains contractual agreements with the Delta Diablo Sanitary District to provide household hazardous waste collection and disposal services in the city. Household hazardous waste generated in Brentwood can be taken to the Delta Household Hazardous Waste Collection Facility, located at 2550 Pittsburg-Antioch Hwy, in Pittsburg. The facility is available to the residents of the following east Contra Costa County communities: Antioch, Bay Point, Bethel Island, Brentwood, Byron, Discovery Bay, Knightsen, Oakley, and Pittsburg. State regulations limit the transportation of HHW to 15 gallons or 125 pounds per vehicle per visit. Individual containers are limited to a 5-gallon capacity. There are no limitations on the number of trips per day.

The following types of hazardous waste are not accepted at the facility: appliances, asbestos, compressed gas cylinders (except propane and helium), infectious or biologically active materials, radioactive materials, railroad ties or treated wood, tires, explosives, or ammunition.

Annual hazardous waste drop off events are scheduled throughout east Contra Costa County on various Saturdays throughout the year. These events are open to all east county residents who present a valid driver's license.

SOLID WASTE GENERATION RATES AND VOLUMES

In 2012, Brentwood's Solid Waste Transfer Station averaged approximately 155 tons per day of materials received, which is significantly below the facility's permitted capacity of 400 tons per day.

The California Department of Resources Recycling and Recovery (CalRecycle) tracks and monitors solid waste generation rates on a per capita basis. Per capita solid waste generation rates and total annual solid waste disposal volumes for the City of Brentwood between 2007 and 2011 are shown in Table 3.14-8 below.

TABLE 3.14-8: SOLID WASTE GENERATION RATES

Year	Waste Generation Rate (lbs/person/day)	Total Disposal Tonnage (tons/year)
2007	5.0	44,101
2008	3.9	36,044
2009	3.4	32,204
2010	3.3	31,326
2011	3.1	29,609

SOURCE: HTTP://WWW.CALRECYCLE.CA.GOV/LGCENTRAL/REPORTS/JURISDICTION/REVIEWREPORTS.ASPX ACCESSED FEBRUARY 2013.

As shown in the table above, both the per capita waste generation rate and the total annual disposal tonnage in Brentwood has been trending downward consistently from 2007 through 2011.

In accordance with AB 939, which required municipalities to aggressively pursue MSW source reduction and recycling, the City continues to meet and exceed all AB 939 goals. The various solid waste management actions adopted by the City include, but are not limited to, recycling and yard waste programs for residents and businesses, public education and public outreach, school recycling, City office recycling programs, and purchasing policies. The City currently achieves a waste diversion rate of approximately 73%.

FUNDING

The City's solid waste collection services operate as an enterprise fund. An enterprise fund establishes a separate accounting and financial reporting mechanism for municipal services for which a fee is charged in exchange for goods or services. Under enterprise accounting, the

revenues and expenditures of services are separated into separate funds with their own financial statements, rather than commingled with the revenues and expenses of all other government activities. The City's General Fund is not used for solid waste collection service costs. The revenues generated from service collection fees adequately fund the operation of the City's transfer station and Solid Waste Division operations, including solid waste collections.

REGULATORY SETTING – SOLID WASTE

FEDERAL

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) was enacted in 1976 to address the huge volumes of municipal and industrial solid waste generated nationwide. After several amendments, the Act as it stands today governs the management of solid and hazardous waste and underground storage tanks (USTs). RCRA, enacted in 1976, is an amendment to the Solid Waste Disposal Act of 1965. RCRA has been amended several times, most significantly by the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA is a combination of the first solid waste statutes and all subsequent amendments. RCRA authorizes the Environmental Protection Agency (EPA) to regulate waste management activities. RCRA authorizes states to develop and enforce their own waste management programs, in lieu of the federal program, if a state's waste management program is substantially equivalent to, consistent with, and no less stringent than the Federal program.

STATE

California Integrated Waste Management Act (AB 939 and SB 1322)

The California Integrated Waste Management Act of 1989 (AB 939 and SB 1322) requires every city and county to prepare a Source Reduction and Recycling Element to its Solid Waste Management Plan that identifies how each jurisdiction will meet the mandatory State waste diversion goals of 25% by 1995 and 50% by 2000. The purpose of AB 939 and SB 1322 is to "reduce, recycle, and re-use solid waste generated in the state to the maximum extent feasible." The term "integrated waste management" refers to the use of a variety of waste management practices to safely and effectively handle the municipal solid waste stream with the least adverse impact on human health and the environment. The Act has established a waste management hierarchy, as follows: Source Reduction; Recycling; Composting; Transformation; and Disposal.

California Integrated Waste Management Board Model Ordinance

Subsequent to the Integrated Waste Management Act, additional legislation was passed to assist local jurisdictions in accomplishing the goals of AB 939. The California Solid Waste Re-use and Recycling Access Act of 1991 (§42900-42911 of the Public Resources Code) directs the California Integrated Waste Management Board (CIWMB) to draft a "model ordinance" relating to adequate areas for collecting and loading recyclable materials in development projects. The model ordinance requires that any new development project, for which an application is submitted on or after September 1, 1994, include "adequate, accessible, and convenient areas for collecting and

loading recyclable materials." For subdivisions of single family detached homes, recycling areas are required to serve only the needs of the homes within that subdivision.

LOCAL

Brentwood Municipal Code, Chapter 8.16: Garbage

Chapter 8.16 of the Brentwood Municipal Code contains specific requirements related to:

- Pre-collection and storage of solid waste;
- Waste ownership and responsibilities;
- Waste collection;
- Waste disposal; and
- Solid waste handling.

Brentwood Municipal Code, Chapter 8.40: Construction and Demolition Debris Recycling

In 2003, the City adopted an ordinance to require developers of projects over $75,000 in value to recycle at least 50% of their waste stream. The ordinance was adopted in order to assist the City in meeting the waste diversion requirements mandated by AB 939. The adopted ordinance is included as Chapter 8.40 of the Brentwood Municipal Code.

Chapter 8.40 of the Brentwood Municipal Code contains specific requirements related to the applicable thresholds for projects covered by the ordinance and the requirements for the preparation, submission, and implementation of project-specific waste management plans (WMPs). Any construction, demolition, and renovation projects within the city, the total costs of which are, or are projected to be, greater than or equal to seventy-five thousand dollars or which involve construction and demolition ("covered projects") shall comply with Section 8.40.020(A). For the purposes of determining whether a project meets the foregoing threshold, all phases of a project and all related projects taking place on a single or adjoining parcels, as determined by the WMP compliance official, shall be deemed a single project. The applicant must submit documentation to the WMP official along with a completed WMP that demonstrates that the diversion requirement for the project has been met in order to receive final occupancy approval or final of demolition permits.

Brentwood Source Reduction and Recycling Element

Adopted in 1992, the Brentwood Source Reduction and Recycling Element (SRRE) is a comprehensive 10-year plan describing how the City will achieve the waste diversion requirements established by AB 939 and SB 1322, which required a 25% diversion rate by 1995 and a 50% diversion rate by 2000. The SRRE addresses: waste characterization, source reduction, recycling, composting, solid waste facility capacity, education and public information, funding, special waste, and integration. When the SRRE was adopted in 1992, the City was diverting approximately 4.8%

of the solid waste generated in the city. As described in greater detail below, the City currently diverts approximately 73% of its waste.

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on the environment associated with Utilities if it would:

1. Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or.

2. Not comply with Federal, State, and local statutes and regulations related to solid waste.

IMPACTS AND MITIGATION MEASURES

Impact 3.14-6: The project would be served by a landfill for solid waste disposal needs and will require compliance with various laws and regulations (Less than Significant)

Development under the proposed General Plan may increase the population within the Planning Area to approximately 92,336 persons. As described above, the City of Brentwood has achieved a disposal rate of 3.1 PPD per resident in 2011. Assuming these disposal rates remain constant throughout the life of the General Plan, the new growth under General Plan buildout would result in an increase of approximately 121,080 pounds per day of solid waste (39,058 x 3.1), which equals 60.5 tons per day or 22,097 tons of solid waste per year.

The city's annual increase in solid waste generation is well within the permitted capacity of the Solid Waste Transfer Station and does not exceed the daily permitted capacity of the Keller Canyon landfill. The Solid Waste Transfer Station has a permitted daily capacity of 400 tons, and in 2012 averaged approximately 155 tons per day of materials received. The additional solid waste generated under buildout of the General Plan would not exceed the capacity of the Solid Waste Transfer Station. The Keller Canyon landfill currently handles 2,500 tons of waste per day, although the permit allows up to 3,500 tons of waste per day to be managed at the facility. According to the CalRecycle Solid Waste Facility Permit (07-AA-0032), as of September 2008, the remaining capacity of the landfill's disposal area is estimated at 60-64 million cubic yards, and the estimated closing date for the landfill is 2050.

While there is adequate permitted landfill capacity to accommodate future growth, the proposed General Plan includes policies and actions to further reduce the project's impact on solid waste services, as identified below. The General Plan would not exceed the permitted capacity of the landfill serving the city, and the General Plan complies with regulations related to solid waste. Therefore, impacts to solid waste are **less than significant** and no mitigation is necessary.

GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS

POLICIES

Policy IF 5-1: Provide adequate waste disposal, recycling, and reuse services, including programs that improve public access to solid waste collection and recycling facilities.

Policy IF 5-2: Reduce the amount of waste requiring disposal at landfills and increase recycling and reuse among residents, businesses, and City departments, as set forth in the City's Source Reduction and Recycling Element.

Policy IF 5-3: When feasible, minimize the potential impacts of waste collection, transportation, and the location of potential disposal facilities upon the residents of Brentwood.

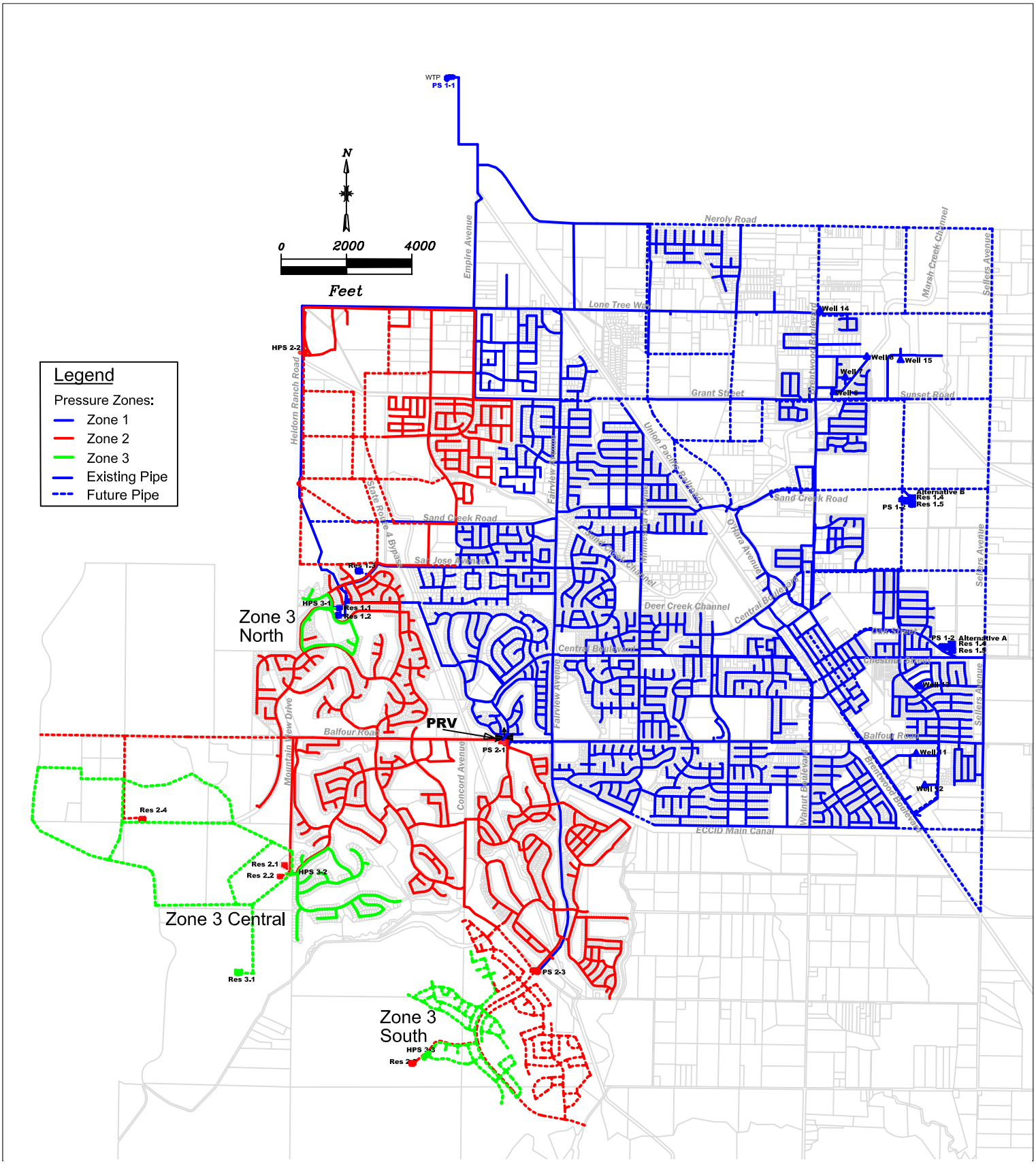
Policy IF 5-4: Locate waste collection, transfer, and processing facilities in areas that minimize impacts to the surrounding community.

Policy IF 5-5: Coordinate with Contra Costa County on any future plans to establish new landfill sites within the county in order to minimize potential adverse impacts to the Brentwood community.

Policy IF 5-6: Participate with Contra Costa County to implement a hazardous materials collection and disposal program.

ACTIONS

Action IF 5a: Periodically review and update the City's Source Reduction and Recycling Element.



BRENTWOOD GENERAL PLAN UPDATE

Figure 3.14-1: Potable Water System

Source: Water Master Plan (City of Brentwood, 2006), West Yost Associates Consulting Engineers. Map date: February 27, 2013.

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CEQA requires an EIR to evaluate a project's effects in relationship to broader changes occurring, or that are foreseeable to occur, in the surrounding environment. Accordingly, this chapter presents discussion of CEQA-mandated analysis for cumulative impacts, irreversible impacts, and growth inducement associated with the proposed General Plan.

4.1 CUMULATIVE SETTING AND IMPACT ANALYSIS

CUMULATIVE SETTING

Under CEQA, the discussion of cumulative impacts should focus on the severity of the impacts and the likelihood of their occurrence. The geographic scope for the cumulative analysis covers the entire Brentwood Planning Area, which includes the city limits, Sphere of Influence, Urban Limit Line, and additional areas of land within portions of unincorporated Contra Costa county surrounding the city, as shown on Figure 2.0-2.

In most cases in this EIR, the buildout analysis utilizes a 20-year horizon, and 2035 is assumed to be the buildout year of the General Plan. The year 2035 is used as the benchmark year for the cumulative analysis contained in this EIR. However, the traffic analysis is based on a future horizon year of 2040. The year 2040 was selected for the traffic analysis based on the future traffic volumes and analysis contained in the Contra Costa Transportation Agency (CCTA) regional travel demand model. The approach and methodology used in the cumulative traffic analysis is described in greater detail in Section 3.13 of this Draft EIR.

Population Growth

Population in the cumulative analysis area has steadily grown over the last several decades as shown by Table 4.0-1. The population in Contra Costa county has increased by approximately 31 percent since 1990, while the population in Brentwood has increased at a tremendous rate, by 581 percent since 1990. Over the past decade-plus (between 2000 and 2013), the population in Contra Costa county increased from 948,816 to 1,074,702 persons, an increase of 13.3 percent, while the population of Brentwood has increased from 23,302 to 53,278, an increase of 129 percent. In recent decades, the largest population growth in Brentwood occurred between 1990 and 2000, with Brentwood's population growing by 208 percent over that 10-year period. In the past three years (2010 to 2013), population growth in the county and the city has slowed significantly, increasing by 2.4 percent in the county and 3.4 percent in the city.

The Association of Bay Area Governments (ABAG) projects population growth in the San Francisco Bay Area. The adopted Plan Bay Area does not include population projections at the local level, but rather presents regional projections. Plan Bay Area states that by 2040 the San Francisco Bay Area is projected to add 2.1 million people, increasing total regional population from 7.2 million to 9.3 million, an increase of 30 percent or roughly 1 percent per year.

The California Department of Finance projects that the population of Contra Costa county will increase to 1,324,740 by 2035, which is an increase of 23.3 percent.

TABLE 4.0-1: POPULATION AND HOUSEHOLD GROWTH

	1970	1980	1990	2000	2010	1970-1990 CHANGE	1990-2010 CHANGE	AVG. ANNUAL CHANGE
BRENTWOOD								
Population	2,649	4,434	7,563	23,302	51,481	186%	581%	7.7%
Households	844	1,532	2,475	7,497	16,494	193%	566%	7.7%
Persons per household	3.12	2.88	3.04	3.10	3.11	-3%	2%	0%
CONTRA COSTA COUNTY								
Population	558,389	656,380	803,732	948,816	1,049,025	44%	31%	2%
Households	172,951	241,418	300,288	344,129	375,364	74%	25%	2%
Persons per household	3.54	2.69	2.64	2.72	2.77	-25%	5%	-1%

SOURCE: U.S. CENSUS, 2000; US CENSUS, 2010; CALIFORNIA DEPARTMENT OF FINANCE, 2012; ABAG, 1990

Land Use

Existing land uses in the Brentwood Planning Area can be characterized in broad terms of residential, commercial, business park, and agricultural. As shown in Table 4.0-2, the predominant land uses within Brentwood are residential uses, with the largest proportion of residential uses ranging from the very low to medium density ranges. Within the Planning Area, the predominant land use is Agricultural Conservation.

4.0-2: EXISTING GENERAL PLAN– ACREAGE BY LAND USE DESIGNATIONS

LAND USE DESIGNATION	CITY LIMITS	SOI/PLANNING AREA	TOTAL
Commercial, Office, and Industrial			
General Commercial	217.7	31.7	249.4
Regional Commercial	151.3	0	151.3
Professional Office	70.7	0	70.7
Industrial	27.85	272.9	300.8
Subtotal	*467.55*	304.6	*772.2*
Residential			
Ranchette Estate	213.2	474.6	213.2
Very Low Density Residential	1,785.5	616.2	2,401.7
Low Density Residential	2,833.7	218.4	3,052.1
Medium Density Residential	1,089.0	0	1,089.0

4.0-2: EXISTING GENERAL PLAN– ACREAGE BY LAND USE DESIGNATIONS			
LAND USE DESIGNATION	CITY LIMITS	SOI/PLANNING AREA	TOTAL
High Density Residential	97.7	0	97.7
Very High Density Residential	37.9	0	37.9
Subtotal	*6,057.0*	*1,309.2*	*7,366.2*
Specific Plan and Mixed Use			
Mixed Use Business Park	569.1	495.6	1,064.7
Downtown Specific Plan	86.5	0	86.5
Brentwood Boulevard Specific Plan	256.0	10.6	266.6
Subtotal	*911.6*	*506.2*	*1,417.8*
Public and Semi-Public			
Public Facility	162.7	0	162.7
Semi-Public Facility	32.0	0	32.0
Parks/Recreation	199.3	3.0	202.3
Community College	37.8	0	37.8
Schools	115.2	0	115.2
Subtotal	*547*	*3.0*	*550.0*
Future Development Area			
Special Planning Area	186.1	925.4	1,111.5
Urban Reserve	0	1,682.0	1,682.0
Subtotal	*186.1*	*2,607.4*	*2,793.5*
Conservation			
Agricultural Conservation	29.1	15,126.7	15,155.8
Permanent Open Space	24.3	2,758.0	2,782.3
Subtotal	*53.4*	*17,884.7*	*17,938.1*
No Designation (right-of-way, etc.)	232.4	47.3	279.7
TOTAL	**8,458.7**	**22,662.3**	**31,121.0**

SOURCE: DE NOVO PLANNING GROUP, 2013

Proposed land uses in the Brentwood Planning Area are shown in Table 4.0-3. Much like the existing General Plan Land Use Map, under the proposed Land Use Map predominant land uses within the city limits remain residential, ranging from the very low to medium density ranges. Within the Planning Area, the predominant land use remains Agricultural Conservation. It is also noted that the Planning Area shown on the proposed Land Use Map is smaller than the Planning Area show on the existing Land Use Map. As part of the General Plan Update, the Planning Area has been reduced by approximately 4,000 acres, nearly all of which is designated as Agricultural Conservation.

TABLE 4.0-3: PROPOSED LAND USE DESIGNATION ACREAGES		
LAND USE DESIGNATION	TOTAL ACRES	
	CITY LIMITS	PLANNING AREA
Residential Land Uses		
Ranchette Estate	159.2	433.5
Residential- Very Low Density	1,128.2	311.9
Residential- Low Density	2,693.5	318.8
Residential- Medium Density	1,118.1	0
Residential- High Density	97.8	0
Residential- Very High Density	37.5	0
Commercial, Office, and Industrial Land Uses		
Business Park	151.7	50.4
Professional Office	53.5	0
General Commercial	206.8	4.8
Regional Commercial	195.2	61.4
Industrial	27.8	0
Specific Plan and Mixed Use Land Uses		
Mixed Use Pedestrian Transit	255.4	0
Brentwood Boulevard Specific Plan	260.7	15.7
Downtown Specific Plan	62.9	0
Planned Development	126.4	0
Public and Semi-Public Land Uses		
Public Facilities	254.5	339.3
Semi-Public Facility	665.6	0.3
Park	357.1	3,331.2
Schools	273.9	38.2
Community College	17.0	0
Future Development Areas		
SPA 1	0	378.2
SPA 2	0	815.2
Urban Reserve	0	79.5
Conservation Land Uses and Lands with No Designation		
Agricultural Conservation	3.6	12,077.4
Permanent Open Space	92.5	383.1
No Designation (right-of-way, etc.)	183.0	68.6
Totals	**8,422.0**	**18,707.6**

SOURCE: DE NOVO PLANNING GROUP, 2013

CUMULATIVE EFFECTS OF THE PROJECT

Method of Analysis

Although the environmental effects of an individual project may not be significant when that project is considered separately, the combined effects of several projects may be significant when considered collectively. Section 15130 of the CEQA Guidelines requires a reasonable analysis of a project's cumulative impacts, which are defined as "two or more individual effects which, when considered together are considerable or which compound or increase other environmental impacts." The cumulative impact that results from several closely related projects is: the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (State CEQA Guidelines 15355[b]). Cumulative impact analysis may be less detailed than the analysis of the project's individual effects (State CEQA Guidelines 15130[b]).

There are two approaches to identifying cumulative projects and the associated impacts. The list approach identifies individual projects known to be occurring or proposed in the surrounding area in order to identify potential cumulative impacts. The projection approach uses a summary of projections in adopted General Plans or related planning documents to identify potential cumulative impacts. Because of the programmatic nature of the Brentwood General Plan, this Draft EIR uses the projection approach for the cumulative analysis and considers buildout of the proposed General Plan.

Cumulative Impacts

Cumulative impacts for most issue areas are not quantifiable and are therefore discussed in general qualitative terms as they pertain to development patterns in the surrounding region. In consideration of the cumulative scenario described above, the proposed project may result in the following cumulative impacts.

AESTHETICS

Impact 4.1: Cumulative Degradation of the Existing Visual Character of the Region (Considerable Contribution and Significant and Unavoidable)

Significant visual resources in the Planning Area include views of Mount Diablo and the Diablo Range; views of Lone Tree Valley, Horse Valley, Deer Valley, and Briones Valley; expansive views of agricultural lands, particularly to the south and east of the city; wildlife habitat areas and natural riparian areas along Marsh Creek, Sand Creek, Deer Creek, and Dry Creek; Marsh Creek Reservoir; gently rolling hillsides with natural grasslands and oak tree habitat; and Marsh Creek State Park[1].

[1] In 2001, the State approved $3 million as part of California's 2001-2002 fiscal year budget that was used to protect 4,000 acres of open space in Contra Costa County on the Cowell Ranch Property, immediately south of Brentwood. The Cowell Ranch/John Marsh State Historic Park encompasses nearly 4,000 acres of natural habitat, wildlife, and unique cultural features, including the historic John Marsh House. Through the efforts

These resources can be viewed from numerous public and private vantage points throughout the city and Planning Area, including highways, roads, open space areas, and private residences and businesses.

Buildout of the proposed General Plan would allow for new development to occur in areas that have historically been used for agricultural operations and areas that have been previously undeveloped, which remain in a naturalized condition. The introduction of new development into previously undisturbed areas or areas that have been historically used for agricultural operations may result in potentially significant impacts to scenic resources or result in the degradation of the Planning Area's visual character. Additionally, new development may result in changes to the skyline throughout the Planning Area, which may obstruct or interfere with views of the surrounding hillsides, Mount Diablo, the Diablo Range, and the surrounding foothill areas.

While growth is anticipated to occur in the cumulative analysis area, the majority of growth is anticipated to occur in and around existing urban development within the Brentwood city limits. Development of land uses and associated infrastructure is planned to occur in the future to accommodate growth envisioned in the general plans that are effective within the cumulative analysis area, including Contra Costa County and the cities of Antioch and Oakley.

The proposed General Plan is representative of this planned development within the city limits of Brentwood and the unincorporated portions of Contra Costa county within the cumulative analysis area. Regional growth has and will continue to result in a cumulative aesthetic effect by converting undeveloped land into developed and occupied areas and increasing overall levels of nighttime lighting. Cumulative development entails grading/landform alteration, the development of structures, and the installation of roadways and other infrastructure that has altered and will continue to permanently alter the region's existing visual character. Subsequent projects implemented under the proposed General Plan would be required to be consistent with the policies and actions of the proposed General Plan and adopted regulations pertaining to aesthetics and lighting in Brentwood. However, even with implementation of adopted policies and regulations, the proposed General Plan has the potential to considerably contribute to permanent changes in visual character, such as obstruction of scenic views, conversion of existing visual character, and increased lighting. No feasible mitigation is available to fully reduce the cumulative effect on visual character, or to mitigate the proposed project's contribution to a less-than-significant level. Therefore, the proposed General Plan's contribution to this cumulative impact is considerable and the impact is **significant and unavoidable**.

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of concerned citizens, as well as The Trust for Public Land and other public entities, this is one of California's newest state parks, although not currently open to the public. At a January 27, 2012 public meeting, the California State Park and Recreation Commission approved the General Plan and certified the Environmental Impact Report (EIR) for the Cowell Ranch/John Marsh State Historic Park and, in a separate action, named it Marsh Creek State Park.

AGRICULTURAL RESOURCES

Impact 4.2: Cumulative Impact to Agricultural Lands and Resources (Considerable Contribution and Significant and Unavoidable)

As shown in Table 3.2-1, there are approximately 1,700 acres of Important Farmlands located within the city limits, including 635.39 acres of Prime Farmland, 27.85 acres of Farmland of Statewide Importance, 0.29 acres of Unique Farmland, and 1,036.5 acres of Farmland of Local Importance. As shown on the General Plan Land Use Map (Figure 2.0-3) all of the land within the city limits is planned for urban development in one form or another. Therefore, it is assumed that the agricultural viability of all of the Important Farmlands within the city limits will eventually be lost upon full buildout of the Brentwood General Plan.

As shown in Table 3.2-1, there are approximately 14,757 acres of Important Farmland located outside of the city limits but within the Planning Area, including 8,386.64 acres of Prime Farmland, 176.18 acres of Farmland of Statewide Importance, 104.08 acres of Unique Farmland, and 6,090.68 acres of Farmland of Local Importance.

Table 3.2-2 identifies the proposed land use designation for the Important Farmland acres located in the Planning Area. As shown in the table, of the 14,757 acres of Important Farmland located within the Planning Area, 12,534 acres (approximately 85%) are assigned land use designations on the General Plan Land Use Map that would protect the agricultural viability of the land. As shown in Table 3.3-2, approximately 2,223 acres of Important Farmland, including 1,399 acres of Prime Farmland, 57.55 acres of Farmland of Statewide Importance, 14.47 acres of Unique Farmland, and 752.26 acres of Farmland of Local Importance may be converted to urban land uses upon full buildout of the Planning Area.

The Brentwood General Plan has taken a proactive approach towards focusing new growth and development towards infill locations, and protecting open space areas and agricultural lands throughout the Planning Area to the greatest extent feasible. The applicable policies and actions that provide protection and preservation of agricultural lands are identified under Impact 3.2-1.

However, as described in greater detail under Impact 3.2-1, implementation of the Brentwood General Plan may lead to the urbanization of approximately 1,700 acres of Important Farmlands located within the city limits, and 2,223 acres of Important Farmland within the Planning Area. The policies and actions identified under Impact 3.2-1 would mitigate this impact to the greatest extent feasible. However, this is considered a cumulatively considerable and **significant and unavoidable** impact.

AIR QUALITY

Impact 4.3: Cumulative Impact on the Region's Air Quality (Less than Cumulatively Considerable)

CEQA requires lead agencies to determine whether a project is consistent with all applicable air quality plans. The Bay Area Air Quality Management District's most current plan is the 2010 Clean Air Plan. The 2010 Clean Air Plan (CAP) is the primary tool used to protect air quality within the jurisdictional boundaries of the BAAQMD. The BAAQMD CEQA Guidelines recommend that lead agencies consider the following questions relative to this consistency determination:

1. Does the project support the primary goals of the 2010 Clean Air Plan?
2. Does the project include applicable control measures from the 2010 Clean Air Plan?
3. Does the project disrupt or hinder implementation of any 2010 Clean Air Plan control measures?

The primary goals of the 2010 Clean Air Plan are to:

- Attain air quality standards;
- Reduce population exposure and protect public health in the Bay Area; and
- Reduce greenhouse gas emissions and protect the climate.

The 2010 Clean Air Plan's first primary goal is to protect air quality. The 2010 Clean Air Plan contains 55 control measures aimed at reducing air pollution in the Bay Area. Along with the traditional stationary, area, mobile source, and transportation control measures, the 2010 Clean Air Plan contains a number of new control measures designed to protect the climate and promote mixed use, compact development to reduce vehicle emissions and exposure to pollutants from stationary and mobile sources. The BAAQMD encourages lead agencies to incorporate these Land Use and Local Impact (LUM) measures and Energy and Climate measures (ECM) into proposed project designs and plan elements.

The Brentwood General Plan Conservation and Open Space Element includes an extensive list of policies and actions that are specifically aimed at improving air quality. These policies and actions, which are presented in Section 3.3 (Air Quality), are consistent with the intent of the control measures by promoting a compact urban development form, emphasizing infill development, and ensuring that land use patterns do not expose sensitive receptors to pollutant concentrations.

Additionally, the Circulation Element includes a wide range of policies and actions that would effectively reduce vehicle miles travelled throughout the Planning Area, through the use of complete streets and multi-modal transportation systems. These applicable policies and actions are described in greater detail in Section 3.13 (Transportation and Circulation).

The policies and actions included throughout the Brentwood General Plan, most specifically within the Conservation and Open Space, Land Use, and Circulation Elements, cover the full breadth of air quality issues as recommended in the 2010 Clean Air Plan. The 2010 Clean Air Plan's second primary goal is to address public health. The 2010 Clean Air Plan addresses public health through

identifying control measures to maximize the reduction in population exposure to air pollutants and by including a category titled "Land Use and Local Impacts Measures" that is intended to address localized impacts of air pollution and to help local jurisdictions to pursue transit-oriented infill development in priority areas.

The 2010 Clean Air Plan's final primary goal of protecting the climate is to reduce greenhouse gases. The General Plan Conservation and Open Space Element includes an extensive list of policies and actions that are specifically aimed at reducing greenhouse gas emissions/climate change. These policies and actions are presented and discussed in more detail in Section 3.7 (Greenhouse Gases and Climate Change).

If approval of the General Plan would not cause the disruption, delay, or otherwise hinder the implementation of any air quality plan control measure, it may be considered consistent with the 2010 CAP. The General Plan does not cause the disruption, delay, or otherwise hinder the implementation of any air quality plan control measure; therefore, it is consistent with the 2010 CAP. Implementation of the General Plan would have a **less than cumulatively considerable impact** relative to this topic.

BIOLOGICAL RESOURCES

Impact 4.4: Cumulative Loss of Biological Resources Including Habitats and Special Status Species (Considerable Contribution and Significant and Unavoidable)

Cumulative development anticipated in the cumulative analysis area will result in impacts to biological resources, including the permanent loss of habitat for special status species, corridor fragmentation, direct and indirect impacts to special status species, and reduction and degradation of sensitive habitat. Biological resources are a limited resource and the cumulative loss is considered significant.

Subsequent projects implemented under the proposed General Plan would be required to be consistent with the policies and actions of the proposed General Plan. However, even with implementation of adopted policies and actions, the proposed General Plan has the potential to considerably contribute to a net reduction in habitat, and increase human presence in the vicinity of special status species and sensitive habitat. No feasible mitigation is available to fully reduce the cumulative effect on these resources, or to mitigate the contribution to a less-than-significant level. Therefore, the proposed General Plan's contribution to this cumulative impact is considerable and the impact is **significant and unavoidable**.

CULTURAL RESOURCES

Impact 4.5: Cumulative Impacts on Known and Undiscovered Cultural Resources (Less than Cumulatively Considerable)

Construction of the individual development projects allowed under the land use designations of the proposed General Plan may result in the discovery and removal of cultural resources, including archaeological, paleontological, historical, and Native American resources and human remains. The proposed General Plan policies and actions, as well as State and Federal regulations, will reduce the risk to resources in the region. As discussed in Section 3.5 (Cultural Resources), each project would require specific surveys for potential resources and the evaluation of any resources discovered during construction activities. Adherence to these policies, actions, and regulations will avoid and/or minimize a cumulative loss of these important resources if they are found during project-specific surveys or construction. Therefore, the proposed General Plan's incremental contribution to cumulative cultural resource impacts would be **less than cumulatively considerable**.

GEOLOGY, SOILS, AND MINERALS

Impact 4.6: Cumulative Impacts related to Geology and Soils (Less than Cumulatively Considerable)

Construction of the individual development projects allowed under the land use designations of the proposed General Plan will result in risks associated with geology and soils. For example, there is an ongoing possibility that a fault located anywhere in the state (or region) could rupture and cause seismic ground shaking. Additionally, grading, excavation, removal of vegetation cover, and loading activities associated with construction activities could temporarily increase runoff, erosion, and sedimentation. Other geologic risks such as liquefaction, landsliding, lateral spreading, and soil expansion are also geologic risks that are present.

While some cumulative impacts will occur in the region as individual projects are constructed, the proposed General Plan policies and actions, as well as State and Federal regulations, will reduce the risk to people in the region. Considering the protection granted by local, State, and Federal agencies and their requirements for seismic design, as discussed in Section 3.6 (Geology, Soils, and Minerals), the overall cumulative impact would not be significant. As a result, the proposed General Plan's incremental contribution to cumulative geologic and soil impacts would be **less than cumulatively considerable**.

GREENHOUSE GASES AND CLIMATE CHANGE

Impact 4.7: Increased Greenhouse Gas Emissions May Contribute to Climate Change (Less than Cumulatively Considerable)

Implementation of the Brentwood General Plan would not directly result in the creation of GHG emissions. However, subsequent development allowed under the General Plan would result in new projects that would increase GHG emissions in the Brentwood Planning Area.

There are a variety of ways in which a general plan could contribute to climate change and result in the generation of GHGs. Sprawling land use patterns that place residences far from employment and retail centers can result in increased vehicle miles traveled (VMT), which increase GHG generation. The conversion of forest lands and open space areas into urbanized uses removes vegetation and trees that have positive carbon sequestration value. Imbalances between local jobs and housing can result in increased commute times and increased VMT associated with longer travel distances between home and work.

The California Air Pollution Control Officers Association (CAPCOA) has identified a number of key opportunities related to each mandatory element of a general plan, as well as optional elements of a general plan, that may assist in reducing GHG emissions associated with land use planning decisions and general plan implementation. These key policy recommendations are summarized under Impact 3.7-1, and are followed by a list of policies and actions contained in the Brentwood General Plan that support or implement these recommendations. It is important to note that the CAPCOA recommendations are not mandatory, and were developed to be general enough to apply to different local agencies throughout California; therefore, not all of the recommendations would necessarily apply to, or be appropriate for, Brentwood.

The Brentwood General Plan was developed with extensive input from the community. The core themes expressed by the community for inclusion in the General Plan closely mirror the policy priorities established by CAPCOA and AB 32. More specifically, the General Plan promotes a compact urban form that prioritizes the preservation of agricultural lands, natural resources, and open space lands. The General Plan also prioritizes the creation of more local quality jobs, which would improve the jobs-housing balance in Brentwood, and provide increased opportunities for Brentwood residents to work locally, rather than commute to jobs outside of the city. The General Plan includes a robust policy set aimed at providing "complete streets" and transportation options that support a wide range of mobility choices, including alternatives to single-passenger vehicles.

In order to determine if the proposed project would generate GHGs that may have a significant cumulative effect on the environment, Brentwood has relied on the proposed project's consistency with previously adopted plans and programs aimed at reducing GHG levels both locally and regionally. In California, the primary legislation related to statewide GHG reduction targets is AB 32, which calls for reducing statewide GHG emissions to 1990 levels by 2020.

The California Emission Estimator Model (CalEEMod) ^{TM} (v.2013.2.2) was used to estimate project-level operational GHG emissions associated with existing conditions, full buildout of the General Plan within the city limits, and full buildout of the General Plan within the Brentwood Planning Area.

As shown in Table 3.7-1, under existing conditions, all sources within Brentwood generate a combined total of 516,695.3 metric tons of CO_2e per year. Following implementation of the GHG reduction measures contained in the proposed General Plan, and accounting for a range of statewide legislative actions to reduce GHG emissions, upon full buildout of the General Plan within the city limits, CO_2e emissions are projected to be 361,490.3 metric tons per year, which

represents a decrease of approximately 30 percent. This decrease in citywide GHG emissions is consistent with the statewide GHG reduction targets established by AB 32.

As demonstrated by the policies and actions listed under Impact 3.7-1, the Brentwood General Plan has taken a progressive and proactive approach to the reduction of GHG emissions through a wide range of measures and programs. The policies and actions are consistent with the policy guidance provided by CAPCOA through the 2009 *Model Policies for Greenhouse Gases in General Plans,* which is consistent with the AB 32 Scoping Plan, and GHG reduction measures recommended by the BAAQMD.

The General Plan Land Use Map was developed to maximize the preservation of agricultural and open space lands in areas outside of the city's Sphere of Influence. The Land Use Element places an emphasis on concentrating new urban development around and within existing established urbanized areas of the city. The General Plan includes numerous policies that promote and encourage infill development, increased residential densities, and permanent preservation of open space through the use of clustered development patterns.

The Circulation Element includes policies that require and promote the development of "complete streets," which provide opportunities for multimodal transportation and reduced VMT. The Circulation Element also promotes the development and expansion of several forms of alternative transit, including bicycle transportation, rail, bus routes, and pedestrian connectivity.

The Conservation and Open Space Element includes several policies that require water and energy conservation measures in new and existing development, and promotes the use of green building practices. This element also promotes the development of a community-wide climate action plan, which will greatly assist in reducing GHG emissions in Brentwood.

All of the policies and actions described above would encourage the development of a compact urban community, while preserving the agricultural and open space resources in the Planning Area. The City's comprehensive approach to this issue in the General Plan would result in increased local employment opportunities, increased transportation and transit options, and the incorporation of conservation and energy efficiency into new development.

In addition to the General Plan policies and actions that assist in reducing climate change impacts listed above, Brentwood has already begun the process of emissions mitigation and energy efficiency within City operations, which is also intended to result in higher energy efficiency and, therefore, savings. The City owns and operates several electric and natural gas vehicles as part of its fleet, which helps reduce the amount of greenhouse gas emitted and saves on gasoline costs. The City also sponsors a low-flow toilet rebate which aids in reducing water usage. The City has also completed construction on a new civic center, which incorporates many different energy efficient design practices in order to effectively save on energy costs.

The proposed General Plan is consistent with the policy guidance provided by CAPCOA and the BAAQMD, and would assist the State in meeting the GHG reduction goals established by AB 32. Therefore, this is a **less than cumulatively considerable impact.**

HAZARDS

Impact 4.8: Cumulative impacts from hazardous materials and human health risks. (Less than Cumulatively Considerable)

Construction of the individual development projects allowed under the land use designations of the proposed General Plan may involve the transportation, use, and/or disposal of hazardous materials, which may involve the use of equipment that contains hazardous materials (e.g., solvents and fuels or diesel-fueled equipment), or the transportation of excavated soil and/or groundwater containing contaminants from areas that are identified as being contaminated. Furthermore, because of the regional nature of the General Plan, some future land uses will inevitably transport or use hazardous materials within ¼ mile of a school, or other sensitive receptors such as hospitals and residences.

While some cumulative impacts will occur in the region as individual projects are constructed, the proposed General Plan policies and actions, as well as State and Federal regulations, will reduce the risk to people in the region. Considering the protection granted by local, State, and Federal agencies and their requirements for the use of hazardous materials in the region, as discussed in Section 3.8 (Hazards), the overall cumulative impact would not be significant. As a result, the proposed General Plan's incremental contribution to cumulative hazards and human health impacts would be **less than cumulatively considerable**.

HYDROLOGY AND WATER QUALITY

Impact 4.9: Cumulative impacts to Hydrology and Water Quality. (Less than Cumulatively Considerable)

Construction of the individual development projects allowed under the land use designations of the proposed General Plan has the potential to result in construction and dewatering related water quality impacts, impacts to groundwater recharge, and cause flooding, erosion, or siltation from the alteration of drainage patterns.

While some cumulative impacts will occur in the region as individual projects are constructed, the proposed General Plan policies and actions, as well as State and Federal regulations, will substantially reduce the impacts. Considering the protection granted by local, State, and Federal agencies and their permit and monitoring requirements, as discussed in Section 3.9 (Hydrology and Water Quality), the overall cumulative impact would not be significant. As a result, the General Plan's incremental contribution to cumulative hydrology impacts would be **less than cumulatively considerable**.

LAND USE AND POPULATION

Impact 4.10: Cumulative Impact on Communities and Local Land Uses (Less than Considerable Contribution)

Cumulative land use and planning impacts, such as the potential for conflicts with adjacent land uses and consistency with adopted plans and regulations, are typically site and project-specific. It may be determined in the project-specific design phase of a development project that an

individual project may require removal of homes and result in the displacement of people and housing; however, these effects are not cumulatively considerable because there is adequate replacement housing available under the proposed General Plan. Additionally, any removal of homes would require adequate compensation to the homeowner in accordance with Federal and State laws.

The land uses allowed under the proposed General Plan provide opportunities for cohesive new growth at in-fill locations within existing urbanized areas, as well as limited new growth within the Planning Area, but would not create physical division within existing communities. New development and redevelopment projects would be designed to complement the character of existing neighborhoods and provide connectivity between existing development and new development within the cumulative analysis area. The proposed General Plan does not include any new roadways, infrastructure, or other features that would divide existing communities. The proposed General Plan's incremental contribution to cumulative land use and population impacts would be **less than cumulatively considerable**.

NOISE

Impact 4.11: Cumulative Exposure of Noise-Sensitive Land Uses to Noise in Excess of Normally Acceptable Noise Levels or to Substantial Increases in Noise (Considerable Contribution and Significant and Unavoidable)

Development in the cumulative analysis area would cause some areas to experience greater construction and operational noise disturbances relative to others. This would result as noise sensitive development becomes more clustered near noise producing land uses, including roadways. The proposed General Plan indirectly increases noise levels by accommodating additional growth and ultimately allowing more traffic on roadways.

The proposed General Plan establishes noise-related policies that, when implemented, protect sensitive receptors from significant noise. The policies that are identified in the Noise Element of the General Plan are consistent with Federal and State regulations designed to protect noise sensitive receptors. Although the policy and regulatory controls for noise-related impacts are in place in the cumulative analysis area, subsequent development allowed under the General Plan would result in an increase in noise. For most projects, consistency with the adopted policies and actions would help to reduce exposure of sensitive receptors to noise levels. However, it may not be feasible to mitigate this impact to a less-than-significant level in all instances, particularly in areas where existing development is located near proposed development. Although the policy and regulatory controls for noise related impacts are in place in the cumulative analysis area, subsequent development projects may result in an increase in ambient noise levels at specific project locations, which may subject surrounding land uses to increases in ambient noise levels.

Tables 3.11-14 and 3.11-15 in Section 3.11 (Noise) show the existing and cumulative noise levels associated with traffic on the local roadway network, including projects within the city and within the Planning Area. Cumulative conditions include traffic due to buildout of the General Plan in

addition to pass through traffic from other jurisdictions. The tables also show the estimated noise level increases which may occur under cumulative conditions.

Cumulative conditions would contribute to an exceedance of the City's transportation noise standards and result in significant increases in traffic noise levels at existing sensitive receptors.

The General Plan includes policies and actions that are intended to reduce noise increases associated with traffic. Specifically, policies N 1-1 through N 1-4, N 1-6 through N 1-10, N 2-1, and Actions N 1a through N 1d would reduce noise increases associated with traffic, as described in Impact 3.11-1. As described in Impact 3.11-1, some traffic noise impacts cannot be mitigated to a less-than-significant level due to the proximity of sensitive receivers to major roadways, and because noise attenuation may not be feasible in all circumstances. As a result, this is a **significant and unavoidable** cumulative impact.

PUBLIC SERVICES AND RECREATION

Impact 4.12: Cumulative Impact on Public Services and Recreation (Less than Cumulatively Considerable)

Cumulative growth that would occur within the cumulative analysis area over the life of the proposed General Plan will result in increased demand for public services, including fire protection, law enforcement, schools, parks, libraries, and other public and governmental services. As the demand for public services and recreation increases, there will likely be a need to address acceptable service ratios, response times, and other performance standards. New or expanded service structures (e.g., offices, maintenance and administrative buildings, schools, parks, fire facilities, libraries, etc.) will be needed to provide for adequate staffing, equipment, and appropriate facilities to serve growth within the cumulative analysis area.

The General Plan includes a range of policies and actions that would ensure that public services are provided in a timely fashion, are adequately funded, are coordinated between the City and appropriate service agency, and that new development funds its fair share of services. The General Plan includes policies to ensure that fire protection and law enforcement services keep pace with new development and that school, library, and governmental services are adequately planned and provided. The General Plan also includes an action to maintain a Capital Improvement Program to defray the cost of developing public facilities. The proposed General Plan's incremental contribution to cumulative public services and recreation impacts would be **less than cumulatively considerable**.

TRANSPORTATION AND CIRCULATION

Impact 4.13: Cumulative Impact on the Transportation Network (Less than Cumulatively Considerable)

As described in Section 3.13 (Transportation and Circulation), the projected cumulative intersection turning movements are shown in Figures 3.13-7A and 3.13-7B for buildout to the city limits, and Figures 3.13-8A and 3.13-8B for buildout to the Planning Area. These traffic volumes reflect regional growth in addition to that projected under buildout of the General Plan.

The planned future roadway network is depicted in Figure 3.13-9, which is also shown in General Plan Figure CIR-1. Table 3.13-11 summarizes the modifications needed to the city intersections to support buildout of the General Plan, as identified in General Plan Action CIR 1b.

Cumulative Intersection Operations

With buildout of General Plan land uses and completion of the roadway improvements identified in Table 3.13-7 and Table 3.13-11, the 38 study intersections are projected to operate acceptably at LOS D or better under buildout to both the city limits and to the Planning Area boundary. A summary of the intersection level of service calculations for buildout conditions within the city limits is contained in Table 3.13-12, and a summary of calculations for buildout to the Planning Area is contained in Table 3.13-13. For reference purposes, levels of service are shown for conditions both with and without the improvements identified in Table 3.13-11. Intersection LOS calculations are provided in the technical appendix.

Cumulative Roadway Segment Operations

With buildout of General Plan land uses and completion of the roadway improvements identified in Table 3.13-7, in addition to the widening of Walnut Boulevard included in the General Plan, the study roadway segments are projected to operate acceptably at LOS D or better during the AM and PM peak hours under both scenarios evaluated. Roadway segment level of service calculations for buildout within the city limits are summarized in Table 3.13-14, and calculations for buildout to the Planning Area are summarized in Table 3.13-15. Copies of the calculations are provided in the technical appendix.

Cumulative Freeway Facility Operations

For conditions under buildout of the General Plan, freeway delay was projected using CCTA's travel demand forecasting model. This average delay was used to calculate the congested travel time and compared against the free-flow travel time to calculate the delay index.

Under conditions with buildout of the Brentwood General Plan to either the city limits or Planning Area, the segment of northbound SR 4 within the city is projected to operate acceptably with a delay index of no more than 2.05, less than the acceptable threshold of 2.5.

A summary of freeway facility peak hour levels of service with General Plan buildout to the city limits is shown in Table 3.13-16. Freeway facility levels of service with General Plan buildout to the Planning Area are shown in Table 3.13-17.

Summary

As described above, and in greater detail in Section 3.13, the proposed General Plan would not result in unacceptable traffic operations on study area intersections, roadway segments, or freeway facilities upon full buildout within the Planning Area. As such, this is a **less than significant impact and less than cumulatively considerable** impact.

UTILITIES AND SERVICE SYSTEMS

Impact 4.14: Cumulative Impact on Utilities (Less than Cumulatively Considerable)

Cumulative growth that would occur within the cumulative analysis area over the life of the proposed General Plan will result in increased demand for water service, sewer service, and solid waste disposal services.

Water: Table 3.14-6 summarizes annual projections of demands and supplies to meet those demands through 2035, as documented in the City's 2010 Urban Water Management Plan. Table 3.14-7 summarizes the same information for projected maximum day demands and supplies. Table 3.14-7 shows a range in demands from 2010 through 2035 based on two different growth rate projections: a high-growth curve, developed from earlier studies for the COBWTP, and a straight-line growth rate. Actual water demands are expected to fall in between these two projections.

As shown in Table 2.0-3, the projected buildout population of the proposed General Plan is lower than the projected buildout population of the existing General Plan by approximately nine percent. Therefore, buildout of the proposed General Plan would not exceed the water supply demand projections contained in the City's 2010 UWMP, which are based on projected buildout of the existing General Plan.

The proposed General Plan includes a range of policies and actions designed to ensure an adequate water supply for development and to minimize the potential adverse effects of increased water use. Policy IF 1-3 requires all development projects to mitigate their infrastructure service impacts or demonstrate that the City's infrastructure, public services, and utilities can accommodate the increased demand for services, and that service levels for existing users will not be degraded or impaired.

Policy IF 2-1 requires the City to ensure that the water system and water supplies are adequate to meet the needs of existing and future development. Action IF 2a requires the City to routinely assess its ability to meet demand for potable water by periodically updating the Water Master Plan. The proposed General Plan also includes a range of policies and actions that call for continued and ongoing water conservation measures, and measures to increase the availability and use of recycled water in order to decrease water supply demands from existing sources.

Given that projected water demands associated with General Plan buildout would not exceed the projected water supplies described in the 2010 Brentwood Urban Water Management Plan, and that the proposed General Plan includes a comprehensive set of goals, policies, and actions to ensure an adequate and reliable source of clean potable water, impacts associated with water supplies are **less than cumulatively considerable.**

Wastewater: As described in greater detail in Section 3.14, the wastewater flow generation rate used in the Wastewater Collection System Master Plan Update is based on 85 gallons per day per person, and the analysis assumed a General Plan buildout population within the city limits of 80,762. For non-residential land uses, including commercial, office, business park, and industrial

uses, the flow generation rate was projected at 1,785 gallons per day per acre. Schools, as well as public and semi-public facilities, were projected at 895 gallons per day per acre. As described in the 2012 Wastewater Collection System Master Plan Update, the Average Dry Weather Flow at the wastewater treatment plant would be between 10.2 mgd and 12.5 mgd upon full buildout of the existing General Plan.

As shown in Table 2.0-3, the proposed General Plan would result in a buildout population of 80,917 within the city limits, which is nearly identical to the projected buildout population used in the wastewater flow projections contained in the 2012 Wastewater Collection System Master Plan Update.

The generation of 10.2 to 12.5 mgd associated with General Plan buildout within the city limits is slightly above the projected treatment capacity of the City's wastewater treatment plant, following completion of the capacity expansion improvements described in Section 3.14. Additionally, the City's existing waste discharge permit would need to be revised to accommodate the increased demand for wastewater treatment. Additional development within the Planning Area would require additional expansions to the wastewater treatment plant in order to accommodate full buildout of the General Plan throughout the Planning Area.

General Plan Policy IF 1-2 requires development, infrastructure, and long-term planning projects to be consistent with all applicable City infrastructure plans, including the Water Master Plan, the Wastewater Master Plan, and the Capital Improvement Program. Policy IF 1-3 requires all development projects to mitigate their infrastructure service impacts or demonstrate that the City's infrastructure, public services, and utilities can accommodate the increased demand for services, and that service levels for existing users will not be degraded or impaired.

Action IF 1a requires the City to periodically review and update the various City master plans for the provision and/or extension of public services to serve existing and future development. These plans include, but are not limited to, the Water Master Plan, the Wastewater Master Plan, and the Capital Improvement Program. Additionally, Action IF 3a specifically requires the City to periodically review and update the Wastewater Master Plan.

While full buildout of the proposed General Plan would slightly exceed the existing treatment capacity of the wastewater treatment plant, the proposed General Plan includes provisions to ensure that new development cannot be approved until it can be demonstrated that adequate capacity is available to serve it. As described above, the City must also periodically review and update the Wastewater Master Plan, and as growth continues to occur within the Planning Area, the City will identify necessary system upgrades and capacity enhancements to meet growth, prior to the approval of new development.

Given that projected wastewater generation volumes associated with General Plan buildout would not exceed the projected wastewater generation volumes described in the 2012 Brentwood Wastewater Collection System Master Plan Update, and that the proposed General Plan includes a comprehensive set of goals, policies, and actions to ensure an adequate and reliable wastewater

collection and treatment system, impacts associated with wastewater treatment and compliance with waste discharge requirements are **less than cumulatively considerable.**

Solid Waste: Development under the proposed General Plan may increase the population within the Planning Area to approximately 92,336 persons. As described in Section 3.14, the City of Brentwood has achieved a disposal rate of 3.1 PPD per resident in 2011. Assuming these disposal rates remain constant throughout the life of the General Plan, the new growth under General Plan buildout would result in an increase of approximately 121,080 pounds per day of solid waste (39,058 x 3.1), which equals 60.5 tons per day or 22,097 tons of solid waste per year.

The city's annual increase in solid waste generation is well within the permitted capacity of the Solid Waste Transfer Station and does not exceed the daily permitted capacity of the Keller Canyon landfill. The Solid Waste Transfer Station has a permitted daily capacity of 400 tons, and in 2012 averaged approximately 155 tons per day of materials received. The additional solid waste generated under buildout of the General Plan would not exceed the capacity of the Solid Waste Transfer Station. The Keller Canyon landfill currently handles 2,500 tons of waste per day, although the permit allows up to 3,500 tons of waste per day to be managed at the facility. According to the CalRecycle Solid Waste Facility Permit (07-AA-0032), as of September 2008, the remaining capacity of the landfill's disposal area is estimated at 60-64 million cubic yards, and the estimated closing date for the landfill is 2050.

While there is adequate permitted landfill capacity to accommodate future growth, the proposed General Plan includes policies and actions to further reduce the project's impact on solid waste services, as identified in Section 3.14 (Utilities). The General Plan would not exceed the permitted capacity of the landfill serving the city, and the General Plan complies with regulations related to solid waste. Therefore, impacts to solid waste are **less than cumulatively considerable.**

4.2 GROWTH-INDUCING EFFECTS

INTRODUCTION

Section 15126.2(d) of the CEQA Guidelines requires that an EIR evaluate the growth-inducing impacts of a proposed action. A growth-inducing impact is defined by the CEQA Guidelines as:

> *The way in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth…It is not assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment.*

Based on the CEQA Guidelines, growth inducement is any growth that exceeds planned growth of an area and results in new development that would not have taken place without implementation of the project. A project can have direct and/or indirect growth inducement potential. Direct growth inducement would result if a project, for example, involved construction of new housing. A project would have indirect growth inducement potential if it established substantial new

permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises) or if it would involve a construction effort with substantial short-term employment opportunities that would indirectly stimulate the need for additional housing and services to support the new employment demand *(Napa Citizens for Honest Government v. Napa County Board of Supervisors)*. Similarly, a project would indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. A project providing an increased water supply in an area where water service historically limited growth could be considered growth-inducing.

The CEQA Guidelines further explain that the environmental effects of induced growth are considered indirect impacts of the proposed action. These indirect impacts or secondary effects of growth may result in significant, adverse environmental impacts. Potential secondary effects of growth include increased demand on other community and public services and infrastructure, increased traffic and noise, and adverse environmental impacts such as degradation of air and water quality, degradation or loss of plant and animal habitat, and conversion of agricultural and open space land to developed uses.

Growth inducement may constitute an adverse impact if the growth is not consistent with or accommodated by the land use plans and growth management plans and policies for the area affected. Local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, sewer service, and solid waste service.

The Brentwood General Plan is a long-term plan intended to accommodate projected population, housing, and employment growth, including the appropriate balance among these factors with the necessary public services and infrastructure. The proposed General Plan would serve as a comprehensive, long-term plan for the physical development of Brentwood. Projected growth is described in Section 3.10 (Land Use and Population), and the environmental consequences related to the potential growth are fully assessed in each topical section. By definition, the proposed Brentwood General Plan is intended to provide for and address future growth in the city.

Because the proposed General Plan provides a framework for development through its Land Use Map, land use designations, goals, policies, and actions, it would directly induce population and employment growth in the Brentwood Planning Area by designating land for development that is more intense, in some instances, than current designations allow. The analysis of the indirect growth-inducing impacts for the Brentwood General Plan focuses on the following factors: inducement of unanticipated population growth; encouragement of economic growth that leads to jobs and housing growth; elimination of obstacles to population growth; and resulting service, facility, or infrastructure demands in excess of existing and planned growth.

The proposed General Plan accommodates future growth in Brentwood, including new businesses, expansion of existing businesses, and new residential uses. Infrastructure and services would need to accommodate future growth. The Brentwood General Plan is oriented toward the economic growth of the city, with emphasis given to encouraging development of a broader array of

businesses, increasing local employment opportunities, and providing residential development as necessary to serve economic growth. The cumulative development scenario addressed in this Draft EIR is the maximum projected development that could occur within the existing city limits and the Planning Area, if every parcel in the city and the Planning Area developed at or near the higher end of densities and intensities allowed under the proposed General Plan.

As shown in Table 2.0-2, buildout of the General Plan could yield up to 9,972 new housing units and 9,896,951 square feet of new non-residential building square footage within the city limits, and 3,642 new housing units and 2,994,116 square feet of new non-residential building square footage within the Planning Area.

The total combined buildout growth within the city limits and the Planning Area could yield up to 13,614 new housing units, 12,891,067 square feet of new non-residential uses, and new population growth of up to 39,058 persons. Depending on growth rates, the actual growth during the life of the General Plan could be lower or higher, but would not exceed the theoretical maximum buildout described in Chapter 2.0.

Given the historical and current population, housing, and employment trends, growth in the city, as well as the entire state, is inevitable. The primary factors that account for population growth are natural increase and net migration. The average annual birth rate for California is expected to be 20 births per 1,000 population. Additionally, California is expected to attract more than one third of the country's immigrants. Other factors that affect growth include the cost of housing, the location of jobs, the economy, the climate, and transportation. While these factors would likely result in growth in Brentwood during the planning period of the proposed General Plan, growth will continue to occur based primarily on the demand of the housing market and demand for new commercial, industrial, and other non-residential uses. As future development occurs under the proposed General Plan, new roads, infrastructure, and services would be necessary to serve the development and this infrastructure would accommodate planned growth. However, growth under the proposed General Plan would remain within the general growth levels projected statewide and would not be anticipated to exceed any applicable growth projections or limitations that have been adopted to avoid an environmental effect. The proposed General Plan is intended to accommodate the City's fair share of statewide housing needs, which are allocated by the Association of Bay Area Governments, based on regional numbers provided by the California Department of Housing and Community Development on a regular basis (every five to eight years).

The proposed General Plan includes policies and actions that mitigate environmental impacts associated with growth, such as air quality, noise, traffic, water supply, and water quality. Additionally, this Draft EIR identifies General Plan policies and actions, where appropriate, that would serve to reduce or eliminate potentially significant impacts associated with specific environmental issues associated with growth. Chapters 3.1 through 4.0 provide a discussion of environmental effects associated with development allowed under the proposed General Plan.

With implementation of General Plan policies and actions intended to guide growth to appropriate areas and provide services necessary to accommodate growth, the land uses allowed under the

proposed General Plan, the infrastructure anticipated to accommodate proposed land uses, and the goal and policy framework would not induce growth that would exceed adopted thresholds. Therefore, population and housing growth associated with the proposed General Plan would result a **less than significant** impact.

4.3 SIGNIFICANT IRREVERSIBLE EFFECTS

CEQA requires that EIRs prepared for the adoption of a plan, policy, or ordinance of a public agency must include a discussion of significant irreversible environmental changes of project implementation. CEQA Guidelines Section 15126.2(c) describes irreversible environmental changes as:

> *Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.*

Consumption of Nonrenewable Resources

Consumption of nonrenewable resources refers to the loss of physical features within the natural environment, including the conversion of agricultural lands, loss of access to mining reserves, and nonrenewable energy use. The Brentwood Planning Area has multiple nonrenewable resources, including agricultural resources, biological resources, water resources, and energy resources.

One of the objectives of the proposed General Plan is to conserve agricultural and other natural resources within the Planning Area. As such, the proposed General Plan directs most new development to infill areas, and areas surrounding existing neighborhoods and urbanized areas. As a result, the proposed General Plan will minimize the potential for impacts to the nonrenewable resources in the Planning Area, including agricultural resources, biological resources, water resources, and energy resources, to the greatest extent feasible. More detailed and focused discussions of potential impacts to these nonrenewable resources are contained throughout this Draft EIR.

Nonrenewable energy resources such as electricity, natural gas, propane, gasoline, and diesel would be consumed during the construction and operation of development projects allowed under the proposed General Plan. The proposed General Plan includes a variety of policies that seek to conserve, protect, and enhance energy resources. These policies focus on energy efficiency in the design, materials, construction, and use of buildings, the use of alternative energy systems, and alternative transportation modes.

Irretrievable Commitments/Irreversible Physical Changes

Implementation of the proposed General Plan would result in a commitment of land uses designated for the foreseeable future. Land use and development consistent with the General Plan would result in irretrievable commitments by introducing development onto sites that are presently undeveloped. The conversion of agricultural lands to urban uses would result in an irretrievable loss of agricultural land, wildlife habitat, and open space. Additionally, development will physically change the environment in terms of aesthetics, air emission, noise, traffic, open space, and natural resources. These physical changes are irreversible after development occurs. Therefore, the proposed General Plan would result in changes in land use within the Planning Area that would commit future generations to these uses.

Impact 4.15: Irreversible Effects (Significant and Unavoidable)

In summary, the proposed General Plan includes an extensive policy framework that is designed to address land use and environmental issues to the greatest extent feasible, while allowing growth and economic prosperity for the city. However, even with the policies and actions that will serve to reduce potential significant impacts, the proposed General Plan will result in significant irreversible changes. This impact is considered a **significant and unavoidable** impact under CEQA.

4.4 SIGNIFICANT AND UNAVOIDABLE IMPACTS

CEQA Guidelines Section 15126.2(b) requires an EIR to discuss unavoidable significant environmental effects, including those that can be mitigated but not reduced to a level of insignificance. The following significant and unavoidable impacts of the Brentwood General Plan are discussed in Chapter 3 and previously in this chapter (cumulative-level). Refer to those discussions for further details and analysis of the significant and unavoidable impacts identified below:

- **Impact 3.1-1:** General Plan implementation could result in substantial adverse effects on visual character, including impacts to scenic vistas or scenic resources (Significant and Unavoidable)
- **Impact 3.2-1:** General Plan implementation would result in the conversion of farmlands, including Prime Farmland, Unique Farmland, and Farmland of Statewide Importance (Significant and Unavoidable)
- **Impact 3.2-2:** General Plan implementation may result in conflicts with existing Williamson Act Contracts (Significant and Unavoidable)
- **Impact 3.11-1:** General Plan implementation may result in exposure to significant traffic noise sources (Significant and Unavoidable)
- **Impact 3.11-7:** General Plan implementation may result in cumulative noise impacts (Significant and Unavoidable)

- **Impact 4.1:** Cumulative Degradation of the Existing Visual Character of the Region (Considerable Contribution and Significant and Unavoidable)
- **Impact 4.2:** Cumulative Impact to Agricultural Lands and Resources (Considerable Contribution and Significant and Unavoidable)
- **Impact 4.4:** Cumulative Loss of Biological Resources Including Habitats and Special Status Species (Considerable Contribution and Significant and Unavoidable)
- **Impact 4.11:** Cumulative Exposure of Noise-Sensitive Land Uses to Noise in Excess of Normally Acceptable Noise Levels or to Substantial Increases in Noise (Considerable Contribution and Significant and Unavoidable)
- **Impact 4.15:** Irreversible Effects (Significant and Unavoidable)

5.1 CEQA REQUIREMENTS

CEQA requires that an EIR analyze a reasonable range of feasible alternatives that meet most or all of the project objectives while reducing or avoiding one or more significant environmental effects of the project. The range of alternatives required in an EIR is governed by a "rule of reason" that requires an EIR to set forth only those alternatives necessary to permit a reasoned choice (CEQA Guidelines Section 15126.6[f]). Where a potential alternative was examined but not chosen as one of the range of alternatives, the CEQA Guidelines require that the EIR briefly discuss the reasons the alternative was dismissed.

A Notice of Preparation was circulated to the public to solicit recommendations for a reasonable range of alternatives to the General Plan. No specific alternatives were recommended by commenting agencies or the general public during the NOP public review process.

5.2 ALTERNATIVES CONSIDERED IN THIS EIR

FACTORS GUIDING SELECTION OF ALTERNATIVES

The alternatives to the General Plan Update selected for analysis in the EIR were developed to minimize significant environmental impacts while fulfilling the basic objectives of the project. The significant environmental impacts associated with the project relate to aesthetic resources, conversion of farmlands, conflicts with Williamson Act Contracts, exposure to traffic noise, irreversible effects of growth, and cumulative effects associated with aesthetics, biological resources, and noise. Significant impacts are summarized in Chapter 4.0 and described in greater detail in Chapters 3.1 through 3.14.

As described in Chapter 2.0 (Project Description), the following objectives have been identified for the proposed project.

1. Reflect the current goals and vision expressed by city residents, businesses, decision-makers, and other stakeholders;
2. Address issues and concerns identified by city residents, businesses, decision-makers, and other stakeholders;
3. Protect Brentwood's family-oriented environment, character, and sense of community;
4. Provide a range of high-quality housing options;
5. Attract and retain businesses and industries that provide high-quality and high-paying jobs so that residents can live and work in Brentwood;
6. Preserve surrounding agricultural lands and the city's agricultural heritage;
7. Expand retail shopping opportunities to provide better local services and increased sales tax revenues;

8. Continue to maintain and improve the road network and provide increased transit opportunities;

9. Maintain strong fiscal sustainability and continue to provide high-quality services; and

10. Address new requirements of State law.

SIGNIFICANT AND UNAVOIDABLE IMPACTS

The proposed General Plan Update would result in the following significant and unavoidable impacts, which are described in Sections 3.1 through 4.0:

- **Impact 3.1-1:** General Plan implementation could result in substantial adverse effects on visual character, including impacts to scenic vistas or scenic resources
- **Impact 3.2-1:** General Plan implementation would result in the conversion of farmlands, including Prime Farmland, Unique Farmland, and Farmland of Statewide Importance
- **Impact 3.2-2:** General Plan implementation may result in conflicts with existing Williamson Act Contracts
- **Impact 3.11-1:** General Plan implementation may result in exposure to significant traffic noise sources
- **Impact 3.11-7:** General Plan implementation may result in cumulative noise impacts
- **Impact 4.1:** Cumulative Degradation of the Existing Visual Character of the Region
- **Impact 4.2:** Cumulative Impact to Agricultural Lands and Resources
- **Impact 4.4:** Cumulative Loss of Biological Resources Including Habitats and Special Status Species
- **Impact 4.11:** Cumulative Exposure of Noise-Sensitive Land Uses to Noise in Excess of Normally Acceptable Noise Levels or to Substantial Increases in Noise
- **Impact 4.15:** Irreversible Effects

ALTERNATIVES TO THE GENERAL PLAN UPDATE

Three alternatives to the General Plan Update were considered based on the analysis performed to identify the environmental effects of the proposed project. Since the General Plan Update was prepared with the intent to be a self-mitigating document, project alternatives focused on amending land uses to address significant impacts. The alternatives analyzed in this EIR include the following:

- Alternative 1: No Project Alternative. Under Alternative 1, the City would not adopt the General Plan Update. The existing Brentwood General Plan would continue to be

implemented and no changes to the General Plan, including the Land Use Map, Circulation Diagram, goals, policies, or actions would occur. Subsequent projects, such as amending the Municipal Code (including the zoning map) and the City's Design Guidelines, would not occur. The existing General Plan Land Use Map is shown on Figure 3.10-3.

- Alternative 2: Economic Development Alternative. Alternative 2 would revise the General Plan Land Use Map to place more emphasis on identifying areas for commercial and industrial growth and less emphasis on future residential development. This alternative emphasizes providing adequate land for a range of commercial, office, and industrial uses and would convert more of the Planning Area to urban uses. Figure 5.0-1 depicts the Land Use Map proposed for Alternative 2. This alternative was developed to reduce exposure of sensitive receptors to traffic noise.

- Alternative 3: Residential Growth Alternative. Alternative 3 provides for a balance of job-creating and residential development land uses within the city limits, and has a reduced amount of growth within the Planning Area when compared to Alternative 2 and the existing General Plan (Alternative 1). This alternative reflects areas identified for growth through the General Plan Update public input process and provides for more significant residential development. While this alternative would result in more residential growth than the proposed General Plan, existing General Plan, or Alternative 2, it would convert less agricultural and undeveloped land in the Planning Area to urban uses than the existing General Plan or Alternative 2. Figure 5.0-2 depicts the Land Use Map proposed for Alternative 3. This alternative was developed to reduce impacts associated with scenic resources and agricultural resources.

A summary of the growth projections, including population growth, housing units, jobs, and the resultant job/housing balance for each alternative is shown in Table 5.0-1.

TABLE 5.0-1: GROWTH PROJECTIONS BY ALTERNATIVE

ALTERNATIVE	POPULATION	DWELLING UNITS	JOBS	JOBS PER HOUSING UNIT
EXISTING CONDITIONS				
City	*53,278*	*17,877*	*12,516*	*0.70*
SOI/Planning Area	*2,333*	*790*	*458*	*0.58*
NEW GROWTH: CITY LIMITS				
Proposed General Plan	27,639	9,972	21,232	2.13
Alternative 1: Existing General Plan	35,944	13,955	19,655	1.41
Alternative 2: Economic Development	24,210	9,031	28,565	3.16
Alternative 3: Residential Growth Alternative	32,872	12,516	23,082	1.84
NEW GROWTH: PLANNING AREA				
Proposed General Plan	11,419	3,642	6,276	1.72
Alternative 1: Existing General Plan	28,208	10,665	17,189	1.61
Alternative 2: Economic Development	17,032	5,438	53,345	9.81
Alternative 3: Residential Growth Alternative	20,955	7,074	19,803	2.80
BUILDOUT CONDITIONS: NEW GROWTH IN CITY PLUS PLANNING AREA				
Proposed General Plan	39,058	13,614	27,508	2.02
Alternative 1: Existing General Plan	64,151	24,620	36,844	1.50
Alternative 2: Economic Development	41,242	14,469	81,910	5.66
Alternative 3: Residential Growth Alternative	53,826	19,590	42,885	2.19
TOTAL GROWTH: EXISTING PLUS BUILDOUT GROWTH				
Proposed General Plan	92,336	31,491	40,024	1.27
Alternative 1: Existing General Plan	119,762	43,287	49,748	1.15
Alternative 2: Economic Development	96,853	33,136	94,814	2.86
Alternative 3: Residential Growth Alternative	109,437	38,257	55,789	1.46

Source: California Department of Finance, 2013; ESRI, 2013, De Novo Planning Group, 2013; BAE, 2013

5.3 ENVIRONMENTAL ANALYSIS

The alternatives analysis provides a summary of the relative impact level of significance associated with each alternative for each of the environmental issue areas analyzed in this EIR.

The primary difference between the proposed General Plan and Alternatives 2 and 3 are the Land Use Maps associated with each of these alternatives. The full set of goals, policies, and actions contained in the proposed General Plan would also apply and be implemented under Alternatives 2 and 3. Therefore, changes to the Land Use Map are the only variables that may increase or decrease the severity of one or more of the significant environmental impacts identified in this Draft EIR. Throughout the preparation of the General Plan Update, the City Council, Planning Commission, and Working Group all expressed a desire and commitment to ensuring that the General Plan not only reflect the community's values and priorities, but also serve as a self-mitigating document and avoid significant environmental impacts to the greatest extent feasible. To further this goal of crafting a self-mitigating General Plan, the environmental analysis contained in this Draft EIR was completed concurrently with the development of the General Plan elements and Land Use Map in order to foster informed decision making regarding the Land Use Map and the General Plan goals, policies, and actions as they were being developed. As the Land Use Map was crafted, refined, and revised throughout the course of the General Plan Update, changes were made on a continuous basis in order to incrementally and substantially reduce potentially significant environmental impacts that were identified. The result of this approach and this process is a proposed General Plan Land Use Map that has reduced potentially significant impacts to the environment to the greatest extent feasible, while still meeting the basic project objectives identified by the City of Brentwood.

In developing the General Plan Land Use Map, the City of Brentwood identified and analyzed a range of alternative land use maps as part of the General Plan Update. These land use map alternatives are presented for analysis in this EIR. As demonstrated in the discussion below, the proposed General Plan Land Use Map is the environmentally superior alternative, as it was specifically developed and refined to eliminate or reduce as many significant environmental effects as possible, while still meeting the basic project objectives.

Following the analysis of each alternative, Table 5.0-5 summarizes the comparative effects of each alternative.

ALTERNATIVE 1 - NO PROJECT

Under Alternative 1, the City would continue to implement the adopted General Plan and no changes would be made to address the requirements of State law. Since adoption of the existing General Plan, State legislation has been passed requiring the City to address new safety and circulation requirements in the General Plan and to address greenhouse gas emissions. The General Plan goals, policies, and actions, as well as the Land Use Map, would not be updated to address the vision and concerns of the city's residents, property owners, decision-makers, and other stakeholders that actively participated in the visioning and goal and policy development process.

Alternative 1 would result in the continuation of existing conditions and development levels, as described in Chapter 3.10 (Land Use and Population) and as shown in Table 2.0-3. New growth would be allowed as envisioned under the existing General Plan, with land uses required to be consistent with the existing General Plan Land Use Map as shown on Figure 3.10-3. Table 5.0-2 shows the acreages of each land use designation for the existing General Plan Land Use Map compared to the proposed Land Use Map.

TABLE 5.0-2: ALTERNATIVE 1 V. PROPOSED GENERAL PLAN LAND USE DESIGNATIONS COMPARISON

LAND USE DESIGNATION	PROPOSED PROJECT - GENERAL PLAN UPDATE (ACRES)		ALTERNATIVE 1 – NO PROJECT (ACRES)		DIFFERENCE	
	CITY LIMITS	PLANNING AREA	CITY LIMITS	PLANNING AREA	CITY LIMITS	PLANNING AREA
Ranchette Estate	159.2	433.5	213.2	474.6	*54*	*41.1*
Residential- Very Low Density	1,128.2	311.9	1,785.5	616.2	*657.3*	*304.3*
Residential- Low Density	2,693.5	318.8	2,833.7	218.4	*140.2*	*-100.4*
Residential- Medium Density	1,118.1	0	1,089.0	0	*-29.1*	*0*
Residential- High Density	97.8	0	97.7	0	*-0.1*	*0*
Residential- Very High Density	37.5	0	37.9	0	*0.4*	*0*
Mixed Use Business Park	0	0	569.1	495.6	*569.1*	*495.6*
Business Park	151.7	50.4	0	0	*-151.7*	*-50.4*
Professional Office	53.5	0	70.7	0	*17.2*	*0*
General Commercial	206.8	4.8	217.7	31.7	*10.9*	*26.9*
Regional Commercial	195.2	61.4	151.3	0	*-43.9*	*-61.4*
Industrial	27.8	0	27.85	272.9	*0.05*	*272.9*
Mixed Use Pedestrian Transit	255.4	0	0	0	*-255.4*	*0*
Brentwood Boulevard Specific Plan	260.7	15.7	260.7	15.7	*0*	*0*
Downtown Specific Plan	62.9	0	62.9	0	*0*	*0*
Planned Development	126.4	0	0	0	*-126.4*	*0*
Public Facilities	254.5	339.3	162.7	0	*-91.8*	*-339.3*
Semi-Public Facility	665.6	0.3	32.0	0	*-633.6*	*-0.3*
Park	357.1	3,331.2	199.3	3.0	*-157.8*	*-3328.2*
Schools	273.9	38.2	115.2	0	*-158.7*	*-38.2*
Community College	17.0	0	37.8	0	*20.8*	*0*
Special Planning Area	0	1,193.4	186.1	925.4	*186.1*	*-268*
Urban Reserve	0	79.5	0	1,682.0	*0*	*1602.5*
Agricultural Conservation	3.6	12,077.4	29.1	15,126.7	*25.5*	*3049.3*
Permanent Open Space	92.5	383.1	24.3	2,758.0	*-68.2*	*2374.9*
No Designation (right-of-way, etc.)	183.0	68.6	232.4	47.3	*49.4*	*-21.3*
TOTAL	**8,422.0**	**18,707.6**	**8,436.15**	**22,667.5**	***14.15*[1]**	***3959.9*[2]**

Source: De Novo Planning Group, 2013

Note 1: The acreage of land within the city limits did not change between the existing General Plan and the proposed General Plan. The discrepancy in acreages within the city limits can be attributed to minor corrections and adjustments made to the GIS data file depicting the city limits, which lead to a negligible difference in acreage totals when the GIS system tabulates the area within the city limits.

Note 2: The size of the Planning Area was reduced during the General Plan Update, thus the Planning Area depicted on the existing General Plan Land Use map is larger than the Planning Area depicted on the proposed Land Use Map.

As shown in Table 5.0-1, Alternative 1 would result in approximately 4,000 more housing units and 1,600 fewer jobs within the Brentwood city limits when compared to the proposed General Plan Land Use Map. As shown in Table 5.0-2, Alternative 1 would provide for approximately 250 additional acres of residential development within the Planning Area, and nearly 500 additional acres of Mixed Use Business Park development within the Planning Area, when compared to the proposed Land Use Map. Alternative 1 offers fewer acres of Medium Density Residential land within the city limits, and does not provide opportunities to develop Mixed Use Pedestrian Transit land uses within the city limits. Additionally, the existing Land Use Map provides for approximately 158 fewer acres of parkland within the city limits, and 158 fewer acres of land designated for schools within the city limits, when compared to the proposed Land Use Map.

Under Alternative 1, there would be an increase in residential growth (approximately 8,300 residents) and a decrease in jobs (approximately 1,600 jobs) within the city limits.

Under cumulative conditions, development in the city limits and Planning Area combined under Alternative 1 would result in a significant increase in residential units (11,000 units) and a population increase of approximately 25,000 more residents than the population growth that may occur under the proposed General Plan.

Under Alternative 1, the existing General Plan policy framework would still be in effect, which would constitute a status quo approach to land use regulation in the city. The policy framework proposed by the General Plan Update that encourages a mix and balance of uses to provide an improved ratio of local jobs to population, would ensure that development pays its fair-share of necessary roadway, public service, and other infrastructure improvements, and that provides for increased protection of natural resources would not occur. This alternative would not include safety policies, particularly those related to flooding, required by State law. This alternative would not include various policies provided to ensure protection of environmental resources, both at the project level and under cumulative conditions, consistent with the objectives of CEQA.

Further, this alternative would not prevent all potential impacts associated with increased development, because development would continue to occur. The land disturbance associated with this alternative is expected to be greater than the proposed project under project-level conditions and cumulative conditions. The increase in land disturbance would result in increased impacts to aesthetics, biological resources, cultural resources, geology and soils, hazards and hazardous materials, and hydrology and water quality compared to the proposed project.

Development under this alternative would result in greater traffic and noise impacts than the proposed project, and a greater amount of agricultural land may be converted to non-agricultural use under this alternative when compared to the proposed project. Additionally, there would be increased demand for public services and utilities, resulting in an increase in environmental impacts associated with facilities improvements to provide public services and utilities.

This alternative fails to meet four of the basic project objectives, which are: (1) to bring the city's General Plan into consistency with State laws pertaining to General Plan updates; (2) to reflect the current goals and visions for the city based on input received during the public participation process; (3) to address current issues and concerns raised during the public participation process; and (4) to attract and retain businesses and industries so that residents can live and work in Brentwood. Therefore, Alternative 1 (No Project) was rejected from further consideration as a CEQA alternative. However, the environmental effects associated with Alternative 1 are summarized in Table 5.0-5 to provide a general comparison between the adopted Brentwood General Plan (Alternative 1), the proposed project, and Alternatives 2 and 3.

ALTERNATIVE 2 – ECONOMIC DEVELOPMENT ALTERNATIVE

Alternative 2 would revise the General Plan Land Use Map to place more emphasis on identifying areas for commercial and industrial growth and less emphasis on future residential development. This alternative emphasizes providing adequate land for a range of commercial, office, and industrial uses, and would convert more of the Planning Area to urban uses. Figure 5.0-1 depicts the Land Use Map proposed for Alternative 2. This alternative was developed to reduce exposure of sensitive receptors to traffic noise.

Land use designations under Alternative 2 would be modified as shown on Figure 5.0-1 and summarized in Table 5.0-3. The goals, policies, and actions of the General Plan Update would apply to subsequent development, planning, and infrastructure projects under this alternative.

As shown in Table 5.0-1, Alternative 2 would result in approximately 940 fewer housing units and 3,400 fewer residents within the Brentwood city limits when compared to the proposed General Plan Land Use Map. Employment opportunities would be increased under this alternative, with approximately 7,300 more jobs created within the city limits when compared to the proposed General Plan.

As shown in Table 5.0-3, Alternative 2 would provide for approximately 29 fewer acres of very low density residential development within the city limits, and approximately 35 fewer acres of medium density residential development within the city limits, when compared to the proposed Land Use Map. Alternative 2 offers approximately 188 more acres of business park land within the city limits, and approximately 70 more acres of general commercial land within the city limits.

As shown in Table 5.0-3 below, Alternative 2 would convert approximately 1,500 more acres of Agricultural Conservation land within the Planning Area to urban uses than the proposed Land Use Map. The majority of this converted land would be Business Park (848 more acres than the proposed Land Use Map) and Industrial (410 more acres than the proposed Land Use Map).

TABLE 5.0-3: ALTERNATIVE 2 V. PROPOSED GENERAL PLAN LAND USE DESIGNATIONS COMPARISON

LAND USE DESIGNATION	PROPOSED PROJECT - GENERAL PLAN UPDATE (ACRES)		ALTERNATIVE 2 – ECONOMIC DEVELOPMENT (ACRES)		DIFFERENCE	
	CITY LIMITS	PLANNING AREA	CITY LIMITS	PLANNING AREA	CITY LIMITS	PLANNING AREA
Ranchette Estate	159.2	433.5	185.65	663.98	*26.45*	*230.48*
Residential- Very Low Density	1,128.2	311.9	1,099.57	605.18	*-28.63*	*293.28*
Residential- Low Density	2,693.5	318.8	2,696.04	967.21	*2.54*	*648.41*
Residential- Medium Density	1,118.1	0	1,083.22	0	*-34.88*	*0*
Residential- High Density	97.8	0	101.46	0	*3.66*	*0*
Residential- Very High Density	37.5	0	45.26	0	*7.76*	*0*
Mixed Use Business Park	0	0	0	0	*0*	*0*
Business Park	151.7	50.4	340.17	898.46	*188.47*	*848.06*
Professional Office	53.5	0	62.42	0	*8.92*	*0*
General Commercial	206.8	4.8	276.97	150.7	*70.17*	*145.9*
Regional Commercial	195.2	61.4	203.71	61.42	*8.51*	*0.02*
Industrial	27.8	0	27.75	409.72	*-0.05*	*409.72*
Mixed Use Pedestrian Transit	255.4	0	235.66	130.71	*-19.74*	*130.71*
Brentwood Boulevard Specific Plan	260.7	15.7	259.74	15.71	*-0.96*	*0.01*
Downtown Specific Plan	62.9	0	58.22	0	*-4.68*	*0*
Planned Development	126.4	0	0	0	*-126.4*	*0*
Public Facilities	254.5	339.3	207.07	311.38	*-47.43*	*-27.92*
Semi-Public Facility	665.6	0.3	675.34	5.13	*9.74*	*4.83*
Park	357.1	3,331.2	368.47	3,331.2	*11.37*	*0*
Schools	273.9	38.2	244.37	0	*-29.53*	*-38.2*
Community College	17.0	0	21.17	0	*4.17*	*0*
Special Planning Area	0	1,193.4	0	0	*0*	*-1193.4*
Urban Reserve	0	79.5	0	492.04	*0*	*412.54*
Agricultural Conservation	3.6	12,077.4	0.16	10,561.07	*-3.44*	*-1516.33*
Permanent Open Space	92.5	383.1	29.99	0	*-62.51*	*-383.1*
No Designation (right-of-way, etc.)	183.0	68.6	185.01	79.11	*2.01*	*10.51*
TOTAL	**8,422.0**	**18,707.6**	**8,407.42**	**18,683.02**	***-14.58[1]***	***-24.58[1]***

Source: De Novo Planning Group, 2013

Note 1: The acreage of land within the city limits and Planning Area did not change between the proposed General Plan and Alternative 2. The discrepancy in acreages within the city limits and Planning Area can be attributed to minor corrections and adjustments made to the GIS data file depicting the planning boundary lines, which leads to a negligible difference in acreage totals when the GIS system tabulates the area within the city limits and Planning Area.

At the cumulative level, development under Alternative 2 within the Planning Area would result in increased traffic when compared to the proposed Land Use Map. At full buildout within the Planning Area, Alternative 2 may generate up to 1.62 million new vehicle miles travelled (VMT) per day, compared to 784,000 VMT under buildout of the proposed General Plan. This would also result in a corresponding increase in air quality impacts. While Alternative 2 would have the potential to generate increased levels of traffic noise, the potential to expose sensitive receptors to excessive traffic noise is reduced under this alternative, as described in greater detail below.

Alternative 2 would likely result in an increase in the significance of some environmental impacts or result in new significant environmental impacts in comparison to the proposed project. The potential for Alternative 2 to increase, reduce, or avoid significant and unavoidable impacts that would occur under the proposed project is discussed below.

Adverse Effects on Visual Character

The proposed project would result in significant and unavoidable impacts associated with adverse effects on visual character, including scenic resources, as described under Impact 3.1-1 in Section 3.1. Under Alternative 2, development patterns within the city limits would be generally comparable to the proposed project, with more commercial, office, and business park growth occurring along the SR 4 corridor in the northwest part of Brentwood. Approximately 188 additional acres of Business Park land and 70 additional acres of General Commercial land would be designated within the city limits under this alternative, which would lead to more intense development than would occur under the proposed General Plan.

The introduction of new and more intense development into previously undisturbed areas or areas that have been historically used for agricultural operations may result in potentially significant impacts to scenic resources or result in the degradation of the city's visual character. Additionally, new development may result in changes to the skyline throughout the city, which may obstruct or interfere with views of the surrounding hillsides, Mount Diablo, the Diablo Range, and the foothill areas surrounding the Brentwood Planning Area.

Buildout under Alternative 2 has the potential to result in new and expanded development along highway corridors with high scenic values, even though these corridors are not officially designated as State Scenic Highways. State Route 4 is the principal highway corridor through the Brentwood Planning Area. Development under Alternative 2 would allow for increased commercial, business park, mixed use, and residential uses along the State Route 4 corridor, including on lands to the west of State Route 4 which are primarily undeveloped. Mount Diablo is the most prominent and visually stunning natural feature visible from the city and the Planning Area, and is located to the west of Brentwood. New development under Alternative 2 would likely be more intense along the SR 4 corridor than it would be under the proposed General Plan and, therefore, has the potential to interrupt views of Mount Diablo and the surrounding naturalized foothills and hillsides from numerous vantage points within Brentwood

to a greater extent than the proposed General Plan. Therefore, impacts associated with Alternative 2 would be greater in comparison to the proposed project.

Farmland Conversion

The proposed General Plan would result in significant and unavoidable impacts related to the conversion of farmlands, as described under Impact 3.2-1 in Section 3.2. As shown on Table 5.0-3, Alternative 2 would preserve approximately 1,500 fewer acres of lands designated Agricultural Conservation within the Planning Area when compared to the proposed General Plan. Alternative 2 would result in approximately 848 more acres of Business Park land and approximately 410 more acres of Industrial land within the Planning Area than the proposed General Plan. Farmland conversion impacts would be greater under Alternative 2 in comparison to the proposed project.

Williamson Act Contract Conflicts

The proposed General Plan would result in significant and unavoidable impacts related to Williamson Act Contract conflicts, as described under Impact 3.2-2 in Section 3.2. As described above, Alternative 2 would preserve approximately 1,500 fewer acres of lands designated Agricultural Conservation within the Planning Area when compared to the proposed General Plan. Alternative 2 would result in approximately 848 more acres of Business Park land and approximately 410 more acres of Industrial land within the Planning Area than the proposed General Plan. This would lead to increased conflicts within Williamson Act Contract lands within the Planning Area, and this impact would be greater under Alternative 2 in comparison to the proposed project.

Traffic Noise Exposure

The proposed project would result in significant and unavoidable impacts associated with increases in traffic noise levels, as described under Impact 3.11-1 in Chapter 3.11, with increases of 3 dB or greater occurring primarily along Balfour Road, Lone Tree Way, O'Hara Avenue, and State Route 4. This alternative would result in decreased residential growth in the city (940 fewer housing units and 3,400 fewer residents within the Brentwood city limits) when compared to the proposed General Plan Land Use Map. While this alternative would result in overall increases in traffic volumes when compared to the proposed General Plan, this alternative would emphasize commercial and business park uses along major transportation corridors in the city, including the roadways listed above. Under this alternative, fewer residences would be located in close proximity to roadway segments that may experience excessive traffic noise levels, particularly within Priority Area 1, along the SR 4 corridor. This alternative would expose fewer sensitive residential receptors to excessive traffic noise than the proposed project. Therefore, while this impact would remain significant and unavoidable under this alternative, the severity of this significant impact would be reduced when compared to the proposed project.

Cumulative: Visual Character

The proposed project would have a considerable contribution to significant cumulative impacts associated with visual character as described under Impact 4.1. Under cumulative conditions, Alternative 2 would result in increased growth and an intensified development pattern within the Planning Area, and would convert approximately 1,500 more acres of Agricultural Conservation lands to urban uses. Alternative 2 would provide for fewer areas of open space and would result in greater aesthetic and visual impacts in comparison to the proposed project. Alternative 2 would result in substantial visual changes to the city and surrounding area and would have a considerable contribution to significant and unavoidable impacts associated with visual character.

Cumulative: Biological Resources

The proposed project would have a considerable contribution to significant cumulative impacts associated with biological resources as described under Impact 4.4. Under cumulative conditions, Alternative 2 would result in increased growth and an intensified development pattern within the Planning Area, and would convert approximately 1,500 more acres of Agricultural Conservation lands to urban uses (see Figure 5.0-1). Alternative 2 would provide for fewer areas of open space and would preserve fewer areas of biological habitat than would be preserved under the proposed project. Thus, Alternative 2 is worse than the proposed project with respect to potential cumulative impacts to biological resources. The development associated with Alternative 2 would be significant and has the potential to remove areas of sensitive habitat and thus would have a considerable contribution to significant and unavoidable impacts to biological resources.

Cumulative: Agricultural Resources

The proposed project would have a considerable contribution to significant cumulative impacts associated with agricultural resources as described under Impact 4.2. Under cumulative conditions, Alternative 2 would result in increased growth and an intensified development pattern within the Planning Area, and would convert approximately 1,500 more acres of Agricultural Conservation lands to urban uses (see Figure 5.0-1). Thus, Alternative 2 is worse than the proposed project with respect to potential cumulative impacts to agricultural resources. The development associated with Alternative 2 would be significant and has the potential to remove substantial areas of Prime Farmland and conflict with existing Williamson Act Contracts, and thus would have a considerable contribution to significant and unavoidable impacts to agricultural resources.

Cumulative: Noise

The proposed project would have a considerable contribution to significant cumulative impacts associated with noise as described under Impact 4.11. Under cumulative conditions, Alternative 2 would result in less residential development within the city limits, and more commercial, industrial, and office development. This difference in the exposure levels of sensitive receptors to significant traffic noise sources would be appreciable under cumulative conditions and this

alternative is better than the proposed project. However, the cumulative level of development would result in significant and unavoidable increases in traffic noise levels and would also increase the cumulative exposure of sensitive receptors.

Irreversible Effects

The proposed project would have a significant and unavoidable impact associated with irreversible environmental effects as described under Impact 4.15. During the planning horizon, development under Alternative 2 within the Planning Area and city limits would be greater in comparison to the proposed project, as described above. Under cumulative conditions, Alternative 2 would result in more residential development and more industrial, commercial, and office development (see Table 5.0-1). Alternative 2 would result in the permanent development of up to 41,242 new residential units and generate up to 82,000 new jobs. Alternative 2 would use nonrenewable resources, including metals, stone, and other materials related to construction, and result in on-going demand for fossil fuels and other resources associated with energy production at levels greater than the proposed project. The associated irretrievable commitment of nonrenewable resources and permanent conversion of agricultural, open space, and other undeveloped lands under Alternative 2 would be a significant impact. Therefore, Alternative 2 would have an increased impact in comparison to the proposed project, and the irreversible effects would remain significant and unavoidable.

ALTERNATIVE 3 – RESIDENTIAL GROWTH ALTERNATIVE

Alternative 3 provides for a balance of job-creating and residential development land uses within the city limits, and has a reduced amount of growth within the Planning Area when compared to Alternative 2 and the existing General Plan (Alternative 1). This alternative reflects areas identified for growth through the General Plan Update public input process and provides for more significant residential development than any of the alternatives or the proposed project. While this alternative would result in more residential growth than the proposed General Plan, existing General Plan, or Alternative 2, this alternative would convert less agricultural and undeveloped land in the Planning Area to urban uses than the existing General Plan or Alternative 2. Figure 5.0-2 depicts the Land Use Map proposed for Alternative 3. This alternative was developed to reduce impacts associated with scenic resources and agricultural resources.

Land use designations under Alternative 3 would be modified as shown on Figure 5.0-2 and summarized in Table 5.0-4. The goals, policies, and actions of the General Plan Update would apply to subsequent development, planning and infrastructure projects under this alternative.

As shown in Table 5.0-1, Alternative 3 would result in approximately 2,544 more housing units and 5,233 more residents within the Brentwood city limits when compared to the proposed General Plan Land Use Map. Employment opportunities would be increased under this alternative, with approximately 1,850 more jobs created within the city limits when compared to the proposed General Plan.

Under full buildout conditions, this alternative would result in a total population within the Planning Area of approximately 109,437, which is 18.5 percent higher than the total population projection under the proposed General Plan.

As shown in Table 5.0-4, Alternative 3 would provide for approximately 52 more acres of Ranchette Estate land, 105 more acres of Low Density Residential land, and 10.3 more acres of Very High Density Residential land within the city limits, when compared to the proposed Land Use Map. Alternative 3 offers approximately 114 more acres of Business Park land within the city limits, 308 more acres of Business Park land within the Planning Area, and approximately 66 more acres of Industrial land within the Planning Area.

As shown in Table 5.0-4 below, Alternative 3 would convert approximately 642 more acres of Agricultural Conservation land within the Planning Area to urban uses than the proposed Land Use Map. The majority of this converted land would be Business Park, Low Density Residential, and Very Low Density Residential.

TABLE 5.0-4: ALTERNATIVE 3 V. PROPOSED GENERAL PLAN LAND USE DESIGNATIONS COMPARISON

LAND USE DESIGNATION	PROPOSED PROJECT - GENERAL PLAN UPDATE (ACRES)		ALTERNATIVE 3 – REDUCED PLANNING AREA INTENSITY ALTERNATIVE (ACRES)		DIFFERENCE	
	CITY LIMITS	PLANNING AREA	CITY LIMITS	PLANNING AREA	CITY LIMITS	PLANNING AREA
Ranchette Estate	159.2	433.5	211.3	591.5	*52.1*	*158*
Residential- Very Low Density	1,128.2	311.9	1,092.2	961.3	*-36*	*649.4*
Residential- Low Density	2,693.5	318.8	2,798.3	867.5	*104.8*	*548.7*
Residential- Medium Density	1,118.1	0	1,121.0	0	*2.9*	*0*
Residential- High Density	97.8	0	106.7	0	*8.9*	*0*
Residential- Very High Density	37.5	0	47.8	0	*10.3*	*0*
Mixed Use Business Park	0	0	0	0	*0*	*0*
Business Park	151.7	50.4	265.7	358.4	*114*	*308*
Professional Office	53.5	0	57.3	0.00	*3.8*	*0*
General Commercial	206.8	4.8	206.8	50.1	*0*	*45.3*
Regional Commercial	195.2	61.4	195.9	43.6	*0.7*	*-17.8*
Industrial	27.8	0	27.7	65.9	*-0.1*	*65.9*
Mixed Use Pedestrian Transit	255.4	0	207.8	59.6	*-47.6*	*59.6*
Brentwood Boulevard Specific Plan	260.7	15.7	259.7	15.7	*-1*	*0*
Downtown Specific Plan	62.9	0	58.2	0	*-4.7*	*0*
Planned Development	126.4	0	0	0	*-126.4*	*0*
Public Facilities	254.5	339.3	211.3	311.4	*-43.2*	*-27.9*
Semi-Public Facility	665.6	0.3	675.3	5.1	*9.7*	*4.8*
Park	357.1	3,331.2	365.1	3,331.2	*8*	*0*
Schools	273.9	38.2	244.4	0	*-29.5*	*-38.2*
Community College	17.0	0	16.0	0	*-1*	*0*
Special Planning Area	0	1,193.4	0	0	*0*	*-1193.4*
Urban Reserve	0	79.5	0	484.6	*0*	*405.1*
Agricultural Conservation	3.6	12,077.4	0.2	11,434.9	*-3.4*	*-642.5*
Permanent Open Space	92.5	383.1	52.8	0	*-39.7*	*-383.1*
No Designation (right-of-way, etc.)	183.0	68.6	185.0	79.11	*2*	*10.51*
TOTAL	**8,422.0**	**18,707.6**	**8,406.5**	**18,659.91**	***-15.5[1]***	***-47.69[1]***

Source: De Novo Planning Group, 2013

Note 1: The acreage of land within the city limits and Planning Area did not change between the proposed General Plan and Alternative 2. The discrepancy in acreages within the city limits and Planning Area can be attributed to minor corrections and adjustments made to the GIS data file depicting the planning boundary lines, which lead to a negligible difference in acreage totals when the GIS system tabulates the area within the city limits and Planning Area.

At the cumulative-level, development under Alternative 3 within the Planning Area would result in increased traffic when compared to the proposed Land Use Map. At full buildout within the Planning Area, Alternative 3 may generate up to 1.33 million new vehicle miles travelled (VMT) per day, compared to 784,000 VMT under buildout of the proposed General Plan. This would also result in a corresponding increase in air quality impacts.

Alternative 3 would likely result in an increase in the significance of most environmental impacts or result in new significant environmental impacts in comparison to the proposed project. The potential for Alternative 3 to increase, reduce, or avoid significant and unavoidable impacts that would occur under the proposed project is discussed below.

Adverse Effects on Visual Character

The proposed project would result in significant and unavoidable impacts associated with adverse effects on visual character, including scenic resources, as described under Impact 3.1-1 in Section 3.1. Under Alternative 3, development patterns within the city limits would be generally comparable to the proposed project, with more Ranchette Estate and Very Low Density Residential development occurring in the central areas of the city, and more Medium Density Residential development occurring within Priority Area 1, west of SR 4.

Approximately 114 additional acres of Business Park land would be designated within the city limits under this alternative, which would lead to more intense development than would occur under the proposed General Plan.

The introduction of new and more intense development into previously undisturbed areas or areas that have been historically used for agricultural operations may result in potentially significant impacts to scenic resources or result in the degradation of the city's visual character. Additionally, new development may result in changes to the skyline throughout the city, which may obstruct or interfere with views of the surrounding hillsides, Mount Diablo, the Diablo Range, and the foothill areas surrounding the Brentwood Planning Area.

Buildout under Alternative 3 has the potential to result in new and expanded development along highway corridors with high scenic values, even though these corridors are not officially designated as State Scenic Highways. State Route 4 is the principal highway corridor through the Brentwood Planning Area. Development under Alternative 3 would allow for increased commercial, business park, mixed use, and residential uses along the State Route 4 corridor, including on lands to the west of State Route 4 which are primarily undeveloped. Mount Diablo is the most prominent and visually stunning natural feature visible from the city and the Planning Area, and is located to the west of Brentwood. The intensity and scale of development under this alternative would be comparable to the intensity and scale of the proposed project, and less intense than development that would occur under Alternatives 1 or 2. As such, this alternative would have similar impacts to aesthetics and visual resources when compared to the proposed project, and reduced impacts when compared to Alternatives 1 and 2. Impacts to visual resources would remain significant and unavoidable under this alternative.

Farmland Conversion

The proposed General Plan would result in significant and unavoidable impacts related to the conversion of farmlands, as described under Impact 3.2-1 in Section 3.2. As shown on Table 5.0-4, Alternative 3 would preserve approximately 642 fewer acres of lands designated Agricultural Conservation within the Planning Area when compared to the proposed General Plan. Farmland conversion impacts would be greater under Alternative 3 in comparison to the proposed project, but reduced when compared to Alternatives 1 and 2. Impacts to farmland would remain significant and unavoidable under this alternative.

Williamson Act Contract Conflicts

The proposed General Plan would result in significant and unavoidable impacts related to Williamson Act Contract conflicts, as described under Impact 3.2-2 in Section 3.2. As described above, Alternative 3 would preserve approximately 642 fewer acres of lands designated Agricultural Conservation within the Planning Area when compared to the proposed General Plan. This would lead to increased conflicts within Williamson Act Contract lands within the Planning Area, and this impact would be greater under Alternative 3 in comparison to the proposed project, but reduced when compared to Alternatives 1 and 2. Impacts to Williamson Act Contracts would remain significant and unavoidable under this alternative.

Traffic Noise Exposure

The proposed project would result in significant and unavoidable impacts associated with increases in traffic noise levels, as described under Impact 3.11-1 in Chapter 3.11, with increases of 3 dB or greater occurring primarily along Balfour Road, Lone Tree Way, O'Hara Avenue, and State Route 4. This alternative would result in increased residential growth in the city with approximately 2,544 more housing units and 5,233 more residents within the Brentwood city limits when compared to the proposed General Plan Land Use Map. This alternative would result in overall increases in traffic volumes when compared to the proposed General Plan, and would emphasize residential land uses throughout the city, including residential uses along major transportation corridors in the city, including the roadways listed above. Under this alternative, an increased number of residences would be located in close proximity to roadway segments that may experience excessive traffic noise levels, particularly within Priority Area 1, along the SR 4 corridor. This alternative would expose more sensitive residential receptors to excessive traffic noise than the proposed project. Therefore, this impact would remain significant and unavoidable under this alternative, and the severity of this significant impact would be increased when compared to the proposed project.

Cumulative: Visual Character

The proposed project would have a considerable contribution to significant cumulative impacts associated with visual character as described under Impact 4.1. Under cumulative conditions, Alternative 3 would result in increased growth and an intensified development pattern within the Planning Area, and would convert approximately 1,500 more acres of Agricultural Conservation lands to urban uses. Alternative 2 would provide for fewer areas of open space

and would result in greater aesthetic and visual impacts in comparison to the proposed project. Alternative 2 would result in substantial visual changes to the city and surrounding area and would have a considerable contribution to significant and unavoidable impacts associated with visual character.

Cumulative: Biological Resources

The proposed project would have a considerable contribution to significant cumulative impacts associated with biological resources as described under Impact 4.4. Under cumulative conditions, Alternative 3 would result in increased growth and an intensified development pattern within the Planning Area, and would convert approximately 642 more acres of Agricultural Conservation lands to urban uses (see Figure 5.0-2). Alternative 3 would provide for fewer areas of open space and would preserve fewer areas of biological habitat than would be preserved under the proposed project. Thus, Alternative 3 is worse than the proposed project with respect to potential cumulative impacts to biological resources. The development associated with Alternative 3 would be significant and has the potential to remove areas of sensitive habitat and thus would have a considerable contribution to significant and unavoidable impacts to biological resources.

Cumulative: Agricultural Resources

The proposed project would have a considerable contribution to significant cumulative impacts associated with agricultural resources as described under Impact 4.2. Under cumulative conditions, Alternative 3 would result in increased growth and an intensified development pattern within the Planning Area, and would convert approximately 642 more acres of Agricultural Conservation lands to urban uses (see Figure 5.0-2). Thus, Alternative 3 is worse than the proposed project in association with potential cumulative impacts to agricultural resources. Alternative 3 would have reduced cumulative impacts to agricultural resources when compared to Alternatives 1 and 2. The development associated with Alternative 3 would be significant and has the potential to remove substantial areas of Prime Farmland and conflict with existing Williamson Act Contracts, and thus would have a considerable contribution to significant and unavoidable impacts to agricultural resources.

Cumulative: Noise

The proposed project would have a considerable contribution to significant cumulative impacts associated with noise as described under Impact 4.11. Under cumulative conditions, Alternative 3 would result in more residential development within the city limits, and more commercial, industrial, and office development. This increase in the exposure levels of sensitive receptors to significant traffic noise sources would be appreciable under cumulative conditions and this alternative is worse than the proposed project. The cumulative level of development would result in significant and unavoidable increases in traffic noise levels and would also increase the cumulative exposure of sensitive receptors.

Irreversible Effects

The proposed project would have a significant and unavoidable impact associated with irreversible environmental effects as described under Impact 4.15. During the planning horizon, development under Alternative 3 within the Planning Area and city limits would be greater in comparison to the proposed project, as described above. Under cumulative conditions, Alternative 3 would result in more residential development and more industrial, commercial, and office development (see Table 5.0-1). Alternative 3 would result in the permanent development of up to 19,590 new residential units and generate up to 42,885 new jobs. Alternative 3 would use nonrenewable resources, including metals, stone, and other materials related to construction, and result in on-going demand for fossil fuels and other resources associated with energy production at levels greater than the proposed project. The associated irretrievable commitment of nonrenewable resources and permanent conversion of agricultural, open space, and other undeveloped lands under Alternative 3 would be a significant impact. Therefore, Alternative 3 would have an increased impact in comparison to the proposed project, and the irreversible effects would remain significant and unavoidable.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires that an environmentally superior alternative be identified among the alternatives that are analyzed in the EIR. If the No Project Alternative is the environmentally superior alternative, an EIR must also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines Section 15126.6(e)(2)). The environmentally superior alternative is that alternative with the least adverse environmental impacts when compared to the proposed project.

A comparative analysis of the proposed project and each of the project alternatives is provided in Table 5.0-5 below. The table includes a numerical scoring system, which assigns a score of "2," "3," or "4" to the proposed project and each of the alternatives with respect to how each alternative compares to the proposed project in terms of the severity of the environmental topics addressed in this EIR. A score of "3" indicates that the alternative would have the same level of impact when compared to the proposed project. A score of "2" indicates that the alternative would have a better (or reduced) impact when compared to the proposed project. A score of "4" indicates that the alternative would have a worse (or increased) impact when compared to the proposed project. The project alternative with the lowest total score is considered the environmentally superior alternative.

TABLE 5.0-5: COMPARISON OF ALTERNATIVES TO THE PROPOSED PROJECT

ENVIRONMENTAL ISSUE	*PROPOSED PROJECT*	*ALTERNATIVE 1*	*ALTERNATIVE 2*	*ALTERNATIVE 3*
Aesthetics	3 - Same	4- Worse	4- Worse	3 – Same
Agricultural Resources	3 - Same	4- Worse	4- Worse	4- Worse
Air Quality	3 – Same	4- Worse	4- Worse	3 – Same
Biological Resources	3 – Same	4- Worse	4- Worse	4- Worse
Cultural Resources	3 – Same	3 – Same	3 – Same	3 – Same
Geology and Soils	3 – Same	3 – Same	3 – Same	3 – Same
Greenhouse Gases and Climate Change	3 – Same	4- Worse	4- Worse	3 – Same
Hazards and Hazardous Materials	3 – Same	3 – Same	3 – Same	3 – Same
Hydrology and Water Quality	3 – Same	4- Worse	3 – Same	3 – Same
Land Use and Population	3 – Same	3 – Same	3 – Same	3 – Same
Noise	3 – Same	4- Worse	2 - Better	4- Worse
Public Services and Recreation	3 – Same	4- Worse	3 – Same	3 – Same
Transportation and Circulation	3 – Same	4- Worse	4- Worse	3 – Same
Utilities	3 – Same	4- Worse	4- Worse	3 – Same
Cumulative Impacts	3 – Same	4- Worse	4- Worse	4- Worse
Irreversible Effects	3 – Same	4- Worse	4- Worse	4- Worse
SUMMARY	**48**	**60**	**56**	**53**

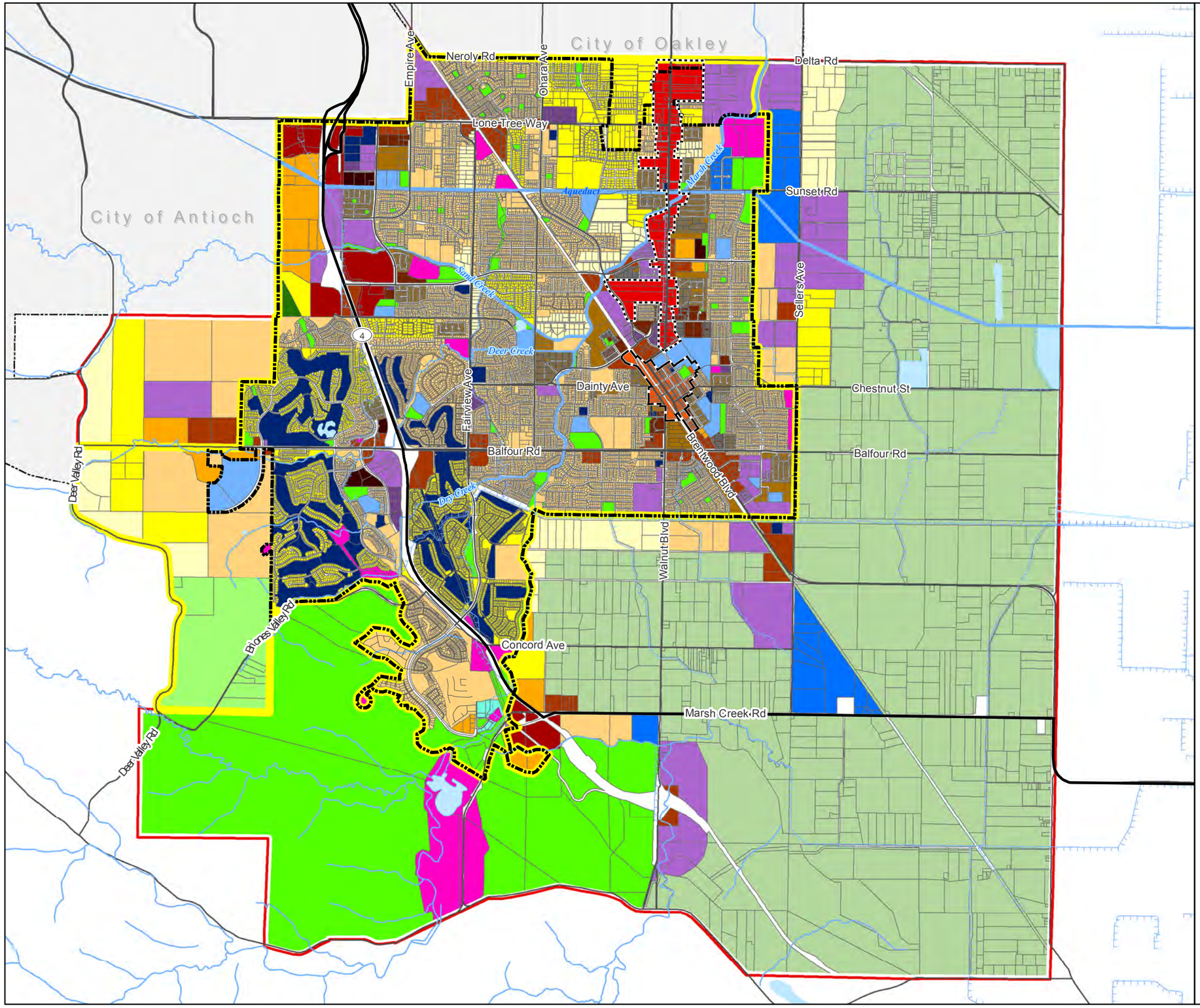
As shown in Table 5.0-5, the proposed project is the environmentally superior alternative when looked at in terms of all potentially significant environmental impacts. However, the purpose of the alternatives analysis is to identify a project alternative that reduces the severity of one or more significant impacts that would result from implementation of the proposed project. While Alternative 3 has the next lowest score when compared to the proposed project and the other alternatives, Alternative 3 fails to reduce the severity of any of the significant and unavoidable impacts of the proposed project.

Alternative 2 would reduce the severity of noise impacts associated with sensitive receptor exposure to traffic noise sources. Overall, the proposed General Plan is the environmentally superior alternative. However, Alternative 2 is the most effective in terms of reducing one or more of the significant impacts of the proposed project. As such, Alternative 2 is the environmentally superior alternative for the purposes of this EIR analysis.

As described previously in this chapter, throughout the preparation of the General Plan Update, the City Council, Planning Commission, and Working Group all expressed a desire and commitment to ensuring that the General Plan not only reflect the community's values and priorities, but also serve as a self-mitigating document and avoid significant environmental impacts to the greatest extent feasible. To further this goal of crafting a self-mitigating General Plan, the environmental analysis contained in this Draft EIR was completed concurrently with the development of the General Plan elements and Land Use Map in order to foster informed decision making regarding the Land Use Map and the General Plan goals, policies, and actions as they were being developed. As the Land Use Map was crafted, refined, and revised throughout the course of the General Plan Update, changes were made on a continuous basis in order to incrementally and substantially reduce potentially significant environmental impacts that were identified. The result of this approach and this process is a proposed General Plan Land Use Map that has reduced potentially significant impacts to the environment to the greatest extent feasible, while still meeting the basic project objectives identified by the City of Brentwood.

CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 5.0-1: Alternative 2 Land Use Map



- DSP - Downtown Specific Plan
- BBSP - Brentwood Blvd Specific Plan
- MUPT - Mixed Use Pedestrian/Transit
- CC - Community College
- I - Industrial
- UR - Urban Reserve
- AGCON - Ag Conservation
- P-OS - Permanent Open Space
- SPF - Semi-Public Facility
- GC - General Com
- RC - Regional Com
- BP - Business Park
- PO - Professional Office
- PF - Public Facility
- P - Park
- RE - Ranchette Estate
- R-VLD - Res Very Low Density
- R-LD - Res Low Density
- R-MD - Res Medium Density
- R-HD - Res High Density
- R-VHD - Res Very High Density
- SCH - School

Planning Areas

- Brentwood City Limits
- Brentwood Sphere of Influence
- Brentwood Planning Area
- Brentwood Blvd. Specific Plan Area
- Downtown Specific Plan Area

N

0 0.5 1
Miles

Data sources: City of Brentwood GIS, Contra Costa County GIS, ESRI StreetMap North America. Map date: October 2, 2013.

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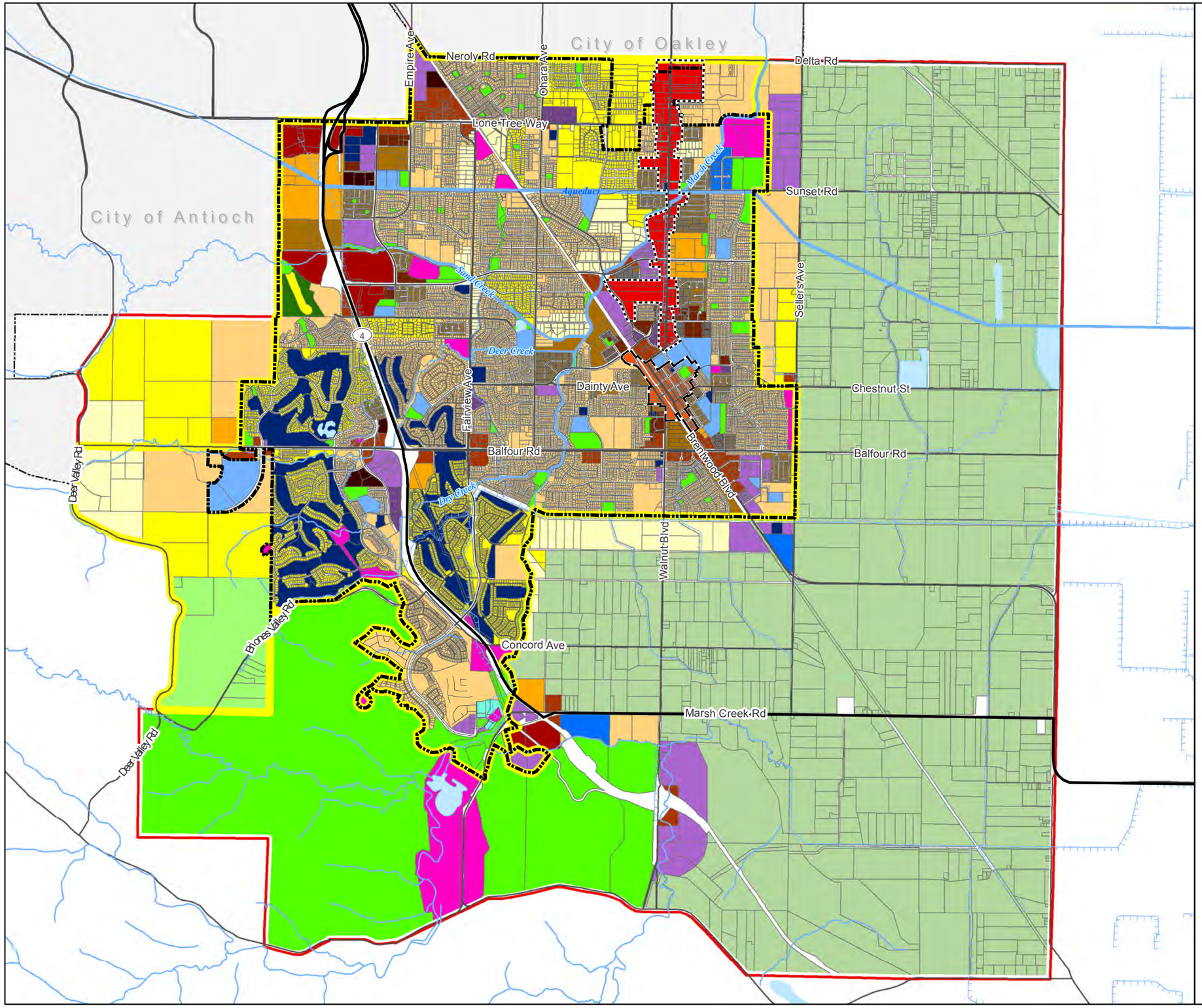
CITY OF BRENTWOOD GENERAL PLAN UPDATE

Figure 5.0-2: Alternative 3 Land Use Map



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Planning Areas

- Brentwood City Limits
- Brentwood Sphere of Influence
- Brentwood Planning Area
- Brentwood Blvd. Specific Plan Area
- Downtown Specific Plan Area

0 0.5 1
Miles

Data sources: City of Brentwood GIS, Contra Costa County GIS, ESRI StreetMap North America. Map date: October 2, 2013.

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