CONSERVATION AND OPEN SPACE ELEMENT

INTRODUCTION

This Element combines two mandatory General Plan Elements: Conservation and Open Space. This Element describes the conservation, development, and use of natural resources. Management strategies for water, energy, and air quality and for biological, mineral, farmland, and cultural resources are identified. This Element also describes the City's strategies for preservation and conservation of open space lands. Important open spaces are identified and policies designed to protect these valued landscapes.

The Conservation and Open Space Elements are combined due to the close connection in the Live Oak Study Area between the location and the use of many of the important resources addressed in this Element. In other words, the need to conserve these resources and their location on undeveloped lands are directly linked.

The purpose of this Element is to identify the goals, policies, and implementation programs that will be used by the City to protect natural, cultural, and open space resources. The chapter focuses on conserving, preserving, and enhancing these resources to ensure a high quality of life for current and future residents. Specifically, the Element provides policies and programs that cover the following conservation topics:

- ✓ protection or improvement of water quality;
- ✓ conservation of farmland;
- ✓ preservation of wetlands consistent with federal and state requirements;
- ✓ protection of special-status species and their habitats;
- ✓ implementation of water conservation programs;
- ✓ promotion of energy conservation and renewable energy;
- ✓ improvement of air quality and reduction of the City's greenhouse gas emissions; and,
- ✓ conservation of important mineral and soil resources.

California Government Code Section 65560 stipulates that open space be maintained for the preservation of natural resources, managed production of resources, recreation, and public health and safety. This Element provides policies and programs to fulfill the following open space goals:

- ✓ preservation of existing agricultural, biological, and recreation resources; and,
- ✓ protection of archaeological sites and historically or culturally important sites.

Other required conservation and open space topics are addressed in the Land Use, Public Safety, and Park and Recreation Elements. The Land Use Diagram in the Land Use Element identifies Buffer areas to remain in open space between State Route (SR) 99 and the railroad and adjacent residential development to ensure public health and safety. Open space is addressed in other ways in the Land Use Element, including policies that promote efficient use of land. Using land more efficiently ensures that the City can provide for growth needs without unnecessarily converting agricultural land and other important open spaces to urban use. Open space for the purpose of recreation and the development

and improvement of recreational trails and related facilities are addressed in the Land Use and the Parks and Recreation Elements. Policies addressing water supply are addressed in the Public Services and Facilities Element. Policies concerning open space for public health and safety are also included in the Public Safety Element. Taken together, the General Plan Background Reports, various elements of the General Plan, and the policy diagrams address all state law–required topics for open space and conservation that are relevant to Live Oak.

KEY CONSERVATION AND OPEN SPACE ISSUES

During a series of General Plan workshops, residents of Live Oak identified several key issues facing the City. The following issues are related to conservation and open space:

- ✓ Farmland surrounds Live Oak, provides scenic open space, and contributes substantially to the local and regional economy. This valuable resource should be protected even as the City accommodates outward growth.
- ✓ Water supply and quality is a precious resource. Water, stormwater, and wastewater should be managed in an environmentally effective and cost-efficient manner.
- ✓ The Sutter Buttes are a globally unique natural feature, views of which should be provided and protected as the city grows.
- ✓ The City's urban tree canopy is important to our air quality, climate, and aesthetic enjoyment. Maintaining and improving this resource will improve the overall quality of life in Live Oak.
- ✓ Air quality in the region does not meet State of California standards. Additionally, the state has established a mandate to reduce total statewide greenhouse gas emissions generated to 1990 levels by 2020.
- ✓ Energy prices are expected to increase substantially over the time horizon of this General Plan. These increases will challenge residents and the City's growth objectives. Live Oak must embrace energy conservation and alternative transportation strategies to remain an economically competitive and livable community.
- ✓ The City will need to protect species and their habitats in compliance with federal and state laws.

CONTENTS OF THIS ELEMENT

As stated above, this Element describes both the City's approach to the conservation of natural resources and the management of open spaces. Conservation strategies are presented first and are divided into eight separate topic areas; open space management is discussed later in the Element. The discussion includes the following topic areas:

- ✓ biological resources;
- ✓ air quality/climate change;
- ✓ cultural resources;
- ✓ energy resources;

- ✓ agricultural resources;
- ✓ mineral/soil resources; and,
- ✓ water resources.

Each topic area includes a description of the context, identification of key issues, and a presentation of goals, policies, and implementation programs.

BIOLOGICAL RESOURCES

BIOLOGICAL CONTEXT

The majority of the land within the Study Area either has been converted to agricultural or urban uses or has experienced some level of disturbance that has compromised its habitat value. While these land uses dominate the area, isolated pockets of native and nonnative vegetation do provide limited habitat for wildlife species (Figure CO-1). Riparian areas along the west bank of the Feather River contain most of the native plant species within the Study Area. Irrigation canals and the Live Oak Slough provide habitat for other important species. A limited number of valley oak trees are found along these canals.

The biological resources setting of the Environmental Impact Report prepared to evaluate this General Plan update identified 27 special-status plant and wildlife species that have potential, or are known to occur in the Study Area. The observed or potential locations of these species are illustrated in Figure CO-2.

Pasture supports a variety of wildlife, particularly ground-nesting birds such as killdeer and western meadowlark. Birds that forage in open grasslands, including raptors, horned lark, northern mockingbird, loggerhead shrike, black phoebe, American crow, blackbirds, and finches, may also use pastures. Croplands generally provide less suitable habitat for wildlife than do pastures because of weed control, tilling, and insect control practices. Amphibians, reptiles, birds, and mammals may disperse across croplands on a seasonal basis. Most notably, rice fields that become flooded during winter rains may provide foraging habitat for herons, egrets, white-faced ibis, sandhill crane, and other wading birds and shorebirds. Most orchards provide minimal habitat. Irrigation channels provide water, cover, and foraging habitat for wildlife in adjacent habitats. These canals provide habitat for mammals, including raccoon, river otter, striped skunk, and muskrat. Aquatic species include mosquito fish, carp, and common garter snake. It is possible that the federally listed giant garter snake exists in the channels anywhere within the Study Area, but particularly on the west side of the Study Area. Red-winged blackbirds and tricolored blackbirds may also nest along these irrigation channels, in stands of hard-stemmed bulrush, cattails, or Himalayan blackberry.

Riparian habitat along the Feather River provides extensive habitat. Wildlife species occurring in this habitat type include white-tailed deer, coyote, wild turkey, opossum, striped skunk, beaver, western gray squirrel, screech owl, great horned owl, red-tailed hawk, Swainson hawk, California quail, and valley elderberry longhorn beetle.

Native trees and large nonnative trees scattered throughout the Study Area, and growing along roadsides and on the edges of agricultural fields, provide habitat for both sensitive and common wildlife species.

KEY ISSUES

The following key issues related to biological resources in the Study Area were identified in the Background Biological Resources Inventory report (City of Live Oak 2006).

- ✓ Special-status species are those plant and animal species that are designated by federal or state regulatory agencies as needing protection due to rarity or threats to their existence. A number of special-status plant and wildlife species, such as Swainson's hawk, giant garter snake, valley elderberry longhorn beetle, and bank swallow, have the potential to occur or are known to occur within the Study Area.
- ✓ Sensitive habitats are those designated by federal or state agencies as such because they are either rare or play an especially valuable role in the larger ecosystem. Sensitive habitat areas within the Study Area include riparian forest habitat along the Feather River and portions of Live Oak Slough and wetlands along waterways in the Study Area.
- ✓ In addition to the large native trees found with the riparian forest habitat along the Feather River, there are scattered native trees and large nonnative trees along roadsides and agricultural fields throughout the Study Area. These trees provide not only habitat for wildlife species, but also have important historic and aesthetic value for city residents.

BIOLOGICAL GOALS, POLICIES, AND IMPLEMENTATION PROGRAMS

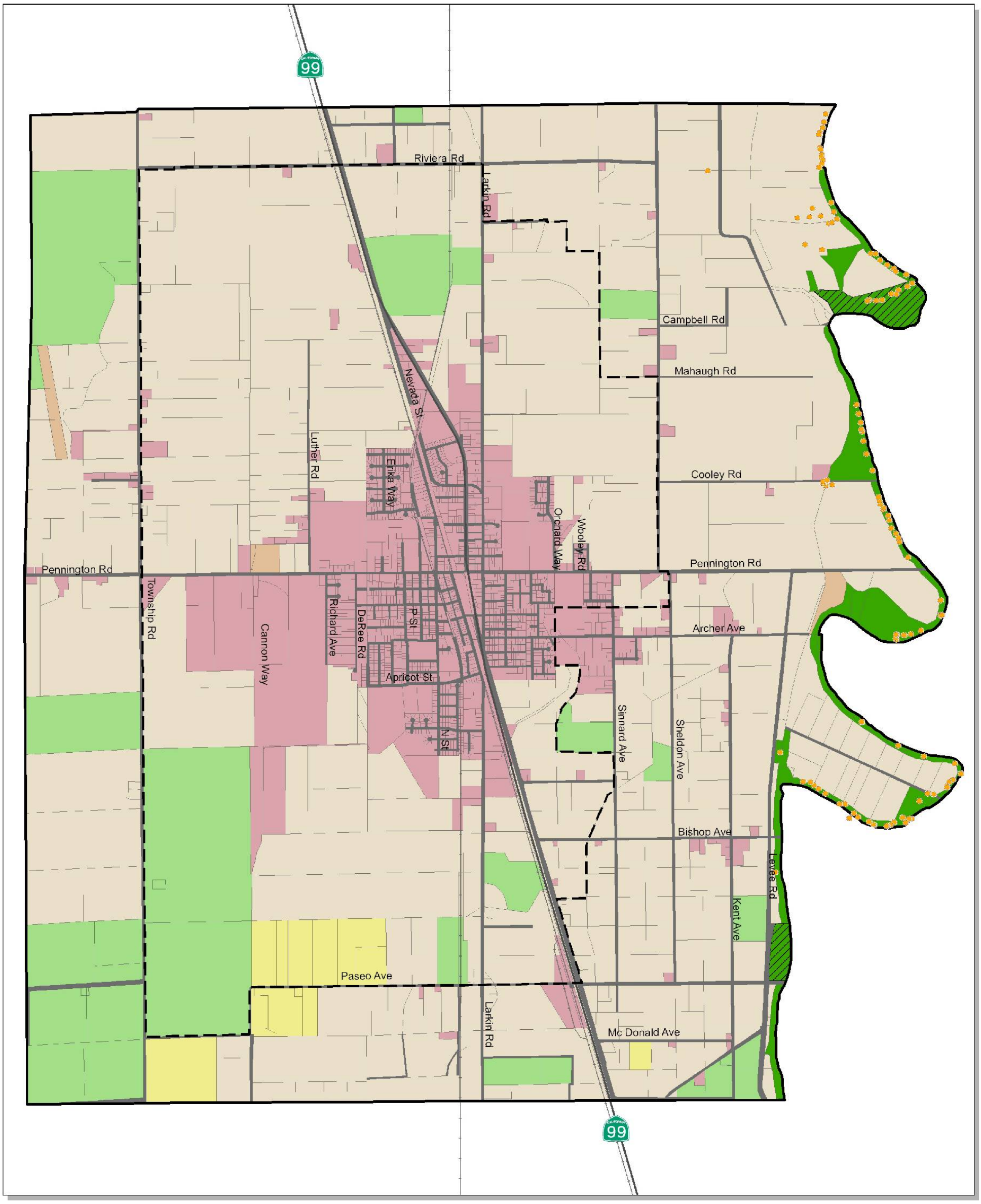
Goals and policies for the Open Space and Conservation Element, aimed at protecting significant biological resources present within the Study Area boundaries, include the following:

Goal BIOLOGICAL-1. Protect and enhance habitat suitable for special-status species that can occur in the Study Area.

Policy Biological-1.1 Applicants of projects that have the potential to negatively affect special-status species or their habitat shall conduct a biological resources assessment and identify design solutions that avoid such adverse effects. If adverse effects cannot be avoided, then they shall be mitigated in accordance with guidance from the appropriate state or federal agency charged with the protection of these species.

Goal BIOLOGICAL-2. Protect native oak and other large tree species occurring throughout the Study Area that provide valuable habitat for wildlife species and contribute to the historic and aesthetic character of the city.

Policy Biological-2.1 New developments shall preserve all native oaks with a diameter at breast height (dbh) of 6 inches or greater and all other trees that have a dbh of 30 inches or greater, to the maximum extent feasible.



LEGEND

- Planning Area
- Study Area
- Elderberry Shrubs

Agricultural Land

- Cropland
- Orchard
- Pasture
- Ruderal

Riparian

- Great Valley Cottonwood Riparian Forest
- Other Riparian

- Urban/Developed

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Source: Sutter County Assessor's Office, CNDDB 2009, SCWA 2005 and 2006, adapted by EDAW 2009

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Figure CO-1
Land Cover

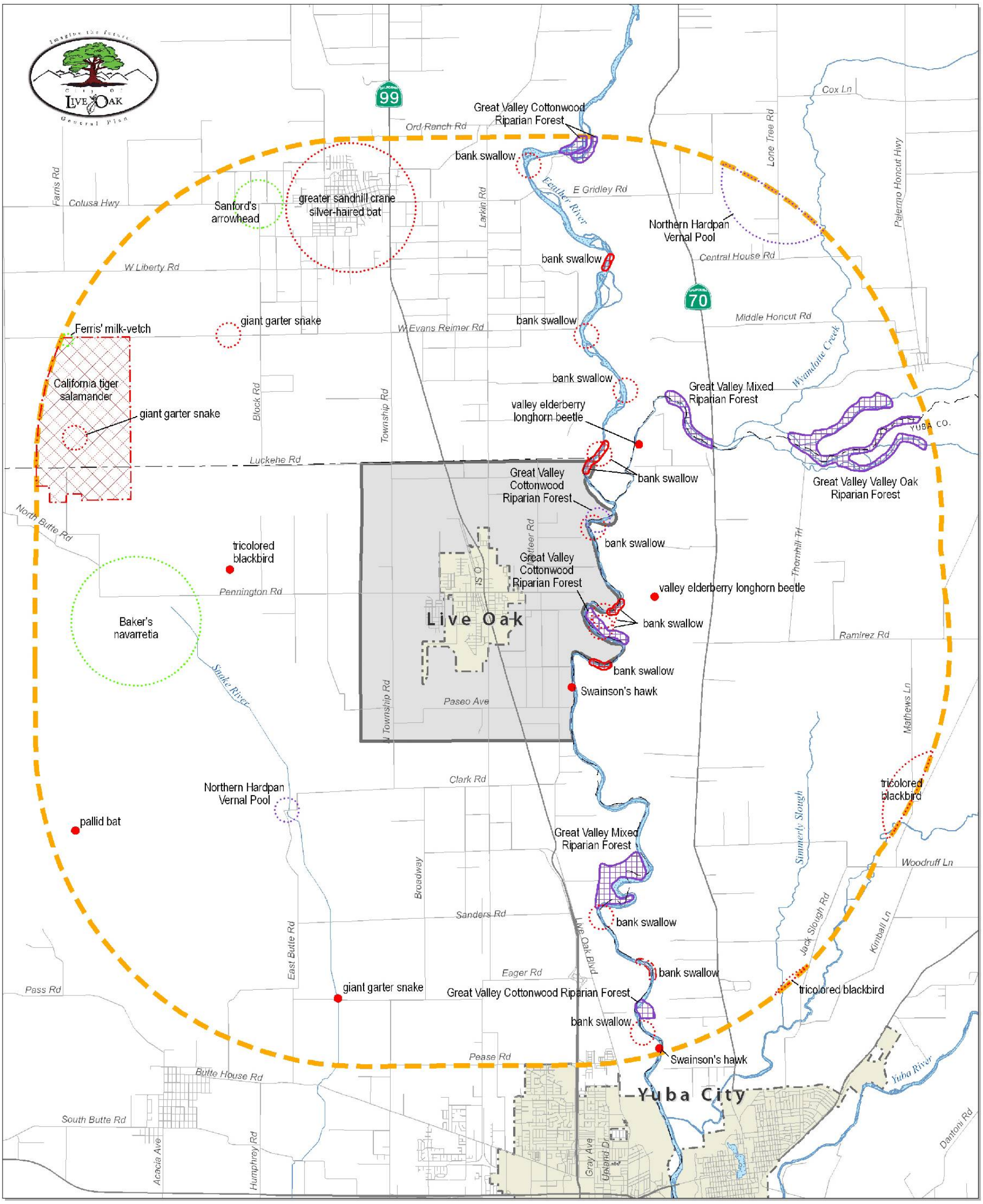

Figure CO-2
Locations of Special-Status Species and Sensitive Natural Communities in the Study Area

Goal BIOLOGICAL-3. Protect and enhance existing riparian habitat within the Study Area.

Policy Biological-3.1 Where feasible, the City will require that new developments avoid the conversion of existing riparian habitat and require that an adequate buffer of the associated riparian areas be established to protect this resource. Where feasible, the riparian buffers shall be incorporated into open space corridors, public landscapes, and parks. Riparian buffers shall be designed to preserve existing wildlife habitat; restore degraded habitat; provide habitat conditions favorable to native local wildlife; restrict activities that may adversely affect wildlife habitat quality within the established buffer zone; and provide interpretive features educating the public about the beneficial effects of native riparian habitat and activities that adversely affect wildlife.

Policy Biological-3.2 The City will take advantage of opportunities to enhance and restore existing riparian areas along Live Oak Slough and other drainage canals. Where feasible, these resources shall be incorporated into open space corridors, public landscapes, and park during the preparation of the Parks and Recreation Master Plan. [1]

Policy Biological-3.3 The City will require new developments to avoid the loss of federally protected and state-protected wetlands. If loss is unavoidable, the City will require applicants to mitigate the loss on a "no net loss" basis through a combination of avoidance, minimization, and/or compensation in accordance with federal and state law.

Policy Biological-3.4 If development or expansion of the Live Oak Park and Recreation Area on the Feather River occurs, the City will encourage designs, construction, and operation to protect sensitive riparian habitat.

Implementation Program Biological-1

The City's survey and mitigation requirements for special-status wildlife species shall be consistent with current guidance from the California Department of Fish and Game and the U.S. Fish and Wildlife Service. For federally listed wildlife species with potential to occur in the vicinity of proposed projects, the following guidelines are provided (project applicants will be required to use the most current version of survey protocol available at the time of project-level environmental review):

- ✓ Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999)
- ✓ Programmatic Formal Endangered Species Act Consultation on Issuance of 404 Permits for Projects with Relatively Small Effects on Listed Vernal Pool Crustaceans Within the Jurisdiction of the Sacramento Field Office, California (USFWS 1996)
- ✓ Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno,

[1] Please refer to the Parks and Recreation Element for more detail.

Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California (USFWS 1997).

- ✓ Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (Buteo swainsoni) in the Central Valley of California (CDFG 1994).
- ✓ Staff Report on Burrowing Owl Mitigation (CDFG 1995 as updated)

For other wildlife species, the following guidance is recommended for pre-construction surveys:

- ✓ Raptors (including long-eared owl, northern harrier, white-tailed kite): for activities in suitable habitat during the breeding season (March through August), pre-construction nest surveys with minimum buffers of 250 feet on active nests.
- ✓ Tricolored blackbird: for activities in suitable habitat during the breeding season (March through August), pre-construction nest surveys with minimum buffers of 250 feet on active nests.
- ✓ Other migratory birds (loggerhead shrike, Song Sparrow "Modesto population"), for activities in suitable habitat during the breeding season (March through August), pre-construction nest surveys with minimum buffers of 10 feet on active nests.
- ✓ Northwestern pond turtle: pre construction surveys in suitable aquatic habitat with relocation of turtles found in the work area into nearby suitable aquatic habitat.
- ✓ Special-status mammals (pallid bat, ringtail, silver-haired bat, western red bat, and American badger): for activities in suitable habitat, pre-construction surveys with minimum buffers of 10 feet on occupied habitat.

Implementation Program Biological-2

The City will develop and adopt an ordinance requiring preservation of all heritage trees within the Study Area. Heritage trees will include native oak trees greater than 6 inches dbh and all other trees greater than 30 inches dbh. The ordinance shall require a certified arborist to evaluate any trees proposed to be removed or disturbed and work with the City to develop measures to preserve the trees or mitigate their loss. The ordinance will provide an exception to projects where any economically viable development is precluded by the existence of a heritage tree.

Implementation Program Biological-3

The City will adopt development standards that require a riparian protection buffer (RPB) specifying an appropriate setback distance from existing riparian habitat or natural water bodies for development or other significant disturbance. This habitat is known to occur near the west bank of the Feather River. In areas with existing development, the RPB shall not be less than 25 feet, measured from top of the bank. In all other areas, the RPB shall not be less than 100 feet, measured from top of bank. If existing riparian vegetation is greater than 100 feet in width, the RPB shall encompass all of the riparian habitat; however, in no case shall the RPB be required to exceed 250 feet. Where feasible, the riparian buffers shall be incorporated into open space

corridors, public landscapes, and parks. Trails and other recreation development should be designed and constructed to be compatible with riparian ecosystem.

AIR QUALITY

AIR QUALITY CONTEXT

Air pollution affects human health, harms the natural and the built environment, damages crops, and changes the climate of the earth. Air pollution can have localized, regional, and global sources and effects.

Toxic air contaminants (TACs) are airborne substances that can cause acute (short-term) and chronic (long-term) health problems, including cancer. TACs include a variety of substances from many different sources, such as gasoline stations, highways and railroads, dry cleaners, industrial operations, power plants, and painting operations. The effects of TACs are mostly experienced locally (close to the source).

Particulate matter (dust) and ozone ("smog") can also have adverse human health effects. The Live Oak area experiences exceedances of California ambient air-quality standards for concentrations of these pollutants, and is classified as nonattainment for ozone and particulate matter of less than 10 micrometers in diameter (PM_{10}) (ARB 2008a).

In addition, emissions of greenhouse gases (GHGs) could have catastrophic impacts related to flooding, habitat suitability, agriculture, and the global economy. The primary GHGs of concern include carbon dioxide, methane, nitrous oxide, and fluorinated compounds. GHGs emitted around the world all contribute to global climate change. [2] In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation. [3]

Addressing the public and environmental health issues related to air quality requires not only conservation policies, but coordination between land use, circulation, health and safety, and community design policies. The location of highways, railroads, and industrial sources compared to houses, schools, and other sensitive land uses is an important consideration in land use planning. Since transportation is the largest source of ozone precursors in the region and of GHGs in California, land use and transportation planning to reduce the need for driving is a fundamental focus for jurisdictions that have air quality goals (ARB 2008b, 2008c). [4]

There are a variety of feasible and routinely used land use, transportation, and design approaches that reduce vehicular travel (and thus preserve air quality). For example:

[2] Please refer to the "Air Quality" section of the General Plan Environmental Impact Report, under separate cover, for more detailed information on climate change-related legislation, emerging climate change-related regulations, climate change science, detailed presentation of primary sources of greenhouse gas emissions, and related topics.

[3] California Air Resources Board. California Greenhouse Gas Emissions Inventory. Available at: <http://www.arb.ca.gov/cc/inventory/data/data.htm>. Accessed February 9, 2009.

[4] Please refer to the California Air Resources Board Web sites for more information on sources of air pollution: http://www.arb.ca.gov/cc/inventory/data/data.htm and http://www.arb.ca.gov/aqd/almanac/almanac08/almanac2008all.pdf.

- ✓ **Placing residential development within walking distance of daily destinations**, such as schools, jobs, shops, parks, and where public transit is available reduces reliance on cars and makes vehicle trips shorter.
- ✓ **Connected street networks** (those that provide many route choices for each destination) also encourage walking and bicycling and reduce trip lengths.
- ✓ The City can **coordinate with Yuba-Sutter Transit** and other transit providers to make public transit a more viable option for commuting in the short term (see the Circulation Element).
- ✓ The City can **identify and work to attract employers** to Live Oak in the future and better match the types of housing available locally with the jobs available locally (see the Land Use, Economic Development, and Housing Elements).

KEY ISSUES

The following key issues relate to air quality in the Study Area:

- ✓ Vehicle emissions are a primary source of air pollutants in Live Oak and the Sacramento region. By attempting to create a more balanced jobs-housing ratio, the City could reduce a large amount of commute-generated vehicle trips and emissions.
- ✓ A number of TAC sources exist within the city. Appropriate planning, design, and mitigation practices will need to be implemented to ensure residents are protected from these potentially hazardous land uses.
- ✓ California has passed legislation aimed at addressing the threat that climate change poses to California's economic, social, and environmental well-being. Live Oak, along with all other local jurisdictions, must coordinate land use and transportation planning according to the state's GHG reduction objectives.

AIR QUALITY GOALS, POLICIES, AND IMPLEMENTATION PROGRAMS

Goals, policies, and implementation programs included below have direct and indirect air quality benefits, and address a broad range of planning and air quality issues facing Live Oak. The Circulation Element, Land Use Element, and Community Character Element each have extensive policy that would also address air quality issues. There are also some air quality benefits to energy conservation strategies. Energy conservation is addressed later in this Element.

Goal AIR-1. **Plan and design the community to encourage walking, bicycling, and use of transit.**

Policy Air-1.1 New neighborhoods will include a mix of land uses, including pedestrian-friendly Civic Centers and Neighborhood Centers ("Centers") that accommodate destination land uses (e.g., local-serving retail, neighborhood services, employment uses, and entertainment uses) to allow neighborhood

residents to meet daily needs without the use of an automobile, and also to provide supportable locations for future transit stops. (See also the Land Use Element.)

Policy Air-1.2 New development shall provide highly connected street networks, which provide many route choices between any given origin and destination point, encourage alternatives to vehicular travel, and shorten trip lengths for vehicular travel. (See also the Circulation Element.)

Policy Air-1.3 City administrative facilities and other government offices established in Live Oak should be located downtown or in Centers, to be accessible by transit, walking, and bicycling.

Policy Air-1.4 The City will encourage and provide incentives for infill development, defined as development that has water and sewer infrastructure available in adjacent streets and does not require extension of such infrastructure to serve the subject project. (See also the Public Utilities, Services and Facilities Element and the Land Use Element.)

Goal AIR-2. Use construction practices and operational strategies that minimize air pollution.

Policy Air-2.1 New development shall implement standard emission control measures recommended by the Feather River Air Quality Management District for construction, grading, excavation, and demolition, to the maximum extent feasible.

Policy Air-2.2 The City will identify a preference for contractors that use low-emission equipment and other practices with air quality benefits (e.g., using locally produced and/or recycled construction materials, recovering demolition materials for reuse, or otherwise diverting refuse or waste from a landfill) for City-sponsored construction projects.

Policy Air-2.3 The City will encourage the prevailing local solid waste disposal provider to use low-emission vehicles and other equipment, and future contracting with solid waste handlers should identify a preference for solid waste contractors that use air quality best management practices.

Policy Air-2.4 City parks and open space will use low-maintenance, drought-tolerant landscaping, except in the case of playing fields. For landscape maintenance that is required, the City will encourage use of low-emission equipment.

Policy Air-2.5 The City will replace its fleet vehicles with low-emission vehicles, as funding is available and as fleet turnover warrants.

Policy Air-2.6 New development shall, as a condition of project approval, implement feasible elements from Feather River Air Quality Management District's standard and

supplemental mitigation measures, where required to reduce project level operational impacts to a less-than-significant level.

Goal AIR-3. Prevent local exposure to harmful and hazardous air pollutants and substantial exposure to odors.

Policy Air-3.1 Development of sensitive uses (such as residences and schools) shall be located an adequate distance from existing and potential sources of air pollutant emissions (including TACs), such as SR 99.

Policy Air-3.2 The City will ensure that industrial, manufacturing, and processing facilities that may produce toxic or hazardous air pollutants are located at an adequate distance from residential areas and other sensitive receptors, taking into consideration weather patterns, the quantity and toxicity of pollutants emitted, and other relevant parameters.

Policy Air-3.3 The City will coordinate with the Feather River Air Quality Management District to identify sources of TACs and determine the need for health risk assessments for proposed development.

Policy Air-3.4 The City will continue to work with local businesses and other agencies to monitor and provide rapid response and communication with the public in the event of an emergency involving air pollution.

Policy Air-3.5 Odor controls should be installed on new and existing sources, as feasible, to reduce exposure for existing and future residents.

Implementation Program Air-1

Following General Plan adoption, the City will develop a GHG reduction program. This program will be tied to estimates of existing and General Plan buildout GHG emissions presented and evaluated in the Live Oak 2030 General Plan EIR (under separate cover). The GHG reduction program will be structured to implement the Global Warming Solutions Act of 2006 (AB 32), as appropriate, within Live Oak.

Policies included in the Circulation, Land Use, Conservation and Open Space, Public Utilities, Services, and Facilities, and Community Character Elements of the 2030 General Plan that have GHG-reducing effects will be analyzed and considered as a part of the City's GHG reduction target. The GHG benefits of these policies are estimated at a programmatic level in the General Plan EIR.

The City may need to revise its quantified emissions reduction target as new information becomes available as a result of a Sustainable Communities Strategy, Alternative Planning Strategy, or other guidance from the State of California or the Regional Transportation Planning process related to Senate Bill 375 (signed September 2008). [5]

[5] SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) for that MPO's Regional Transportation Plan (RTP). ARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks.

As more sophisticated transportation modeling becomes available (modeling is more sensitive to development density, urban design for pedestrian, bicycle, and transit accessibility, and other factors), the City may elect to re-analyze GHG emissions associated with General Plan buildout against the City's GHG reduction target.

In addition to policies included in the General Plan, future regulations would have the effect of reducing GHG emissions associated with General Plan implementation. [6] The effect of future regulations will be analyzed, quantified, and considered as a part of Live Oak's GHG reduction target through implementation of this GHG reduction program.

In addition to policies included in the General Plan and future state regulations, additional plans, projects, or regulations may be necessary to achieve the City's objective of consistency with AB 32. As necessary, the City will identify additional measures that are necessary to reduce GHG emissions and achieve the City's GHG reduction target. Each additional required measure should be enforceable, include a timeline, describe financing mechanisms, and assign responsibility to relevant agencies and departments. The City will consider a broad range of regulatory changes; infrastructure investment strategies; incentives for infill, residential and employment density, and mixing of land uses; contributions to carbon off-set programs; and other measures, as appropriate. The City could consider financing programs for installation and use of renewable energy infrastructure in new and/or existing development, green building codes to further increase energy efficiency in new buildings, travel demand management programs for new nonresidential projects, and other mechanisms that would reduce GHG emissions at General Plan buildout.

The City will identify periodic check-in points for monitoring the effectiveness of policies and measures relative to quantified targets. The first such check-in year shall be no later than 2015. The City will modify policies and measures, as necessary, to achieve the GHG reduction target.

Implementation of this program will require the cooperation of other agencies, private businesses, and residents, and will be implemented over a period of several years. The City will monitor changes in the regulatory and technological environments, as well as grant and other funding programs that could be used to fund this program or implement components of this program. The City will monitor and comply with relevant local, regional, statewide, and federal legislation related to GHG emissions, land use planning, and environmental review, and will make changes to its GHG reduction program accordingly.

Implementation Program Air-2

The City will identify, pursue, and use federal and state funds for bicycle and transit improvements, transit-oriented planning and development, and other planning and improvement grant programs intended to encourage alternatives to automobile transportation.

[6] For example, the California Air Resources Board has drafted an AB 32 Scoping Plan that identifies expected GHG emissions reductions from regulations, such as those that would reduce emissions from vehicles (e.g., AB 1493, Executive Order S-1-07 [i.e., the Low Carbon Fuel Standard]) and utilities (e.g., SB 1368 and companion legislation). If a low carbon fuel standard is implemented, this would reduce emissions associated with the General Plan, along with development throughout California. Other regulatory measures identified under the Scoping Plan could reduce emissions associated with the General Plan (as compared with what is estimated in the General Plan EIR).

Implementation Program Air-3

The City will require implementation of measures to reduce exposure of sensitive receptors to odorous emissions, where necessary, to avoid significant impacts. Odor controls will be required on existing and proposed major odor sources, as feasible, to reduce exposure to existing and future residents. The deeds to all properties of proposed residential uses located near substantial odors shall include a disclosure clause advising buyers and tenants of the potential adverse odor impacts from major sources of odors.

Implementation Program Air-4

The City shall continue to coordinate with FRAQMD to ensure that assumptions and control measures from new air quality plan updates are implemented, as appropriate, as part of General Plan implementation.

CULTURAL RESOURCES

Cultural resources are reminders of the history of the Live Oak area and can be important amenities for the present-day community. The adaptive re-use of buildings in Live Oak's Historic Commercial District demonstrates the community's interest in preserving the history of Live Oak. A review of known cultural resources is essential to understanding the City's history and to evaluating similar types of resources. This information will assist in land use planning, construction, and infrastructure planning. Knowing cultural resource site locations is the key to being able to develop or protect resources, as appropriate, to enhance knowledge and understanding of the City's past.

CULTURAL CONTEXT

During the prehistoric era, the Live Oak Study Area would have been a very productive environment, one well-suited to a hunting-gathering economy with a variety of water birds, small and large mammals, fish, reptiles and amphibians, and edible plant species. Live Oak is in an area historically occupied by two Native American groups: the Konkow (also known as the Northwestern Maidu) and the Valley Nisenan (also known as the Southern Maidu) (Kroeber 1925, Riddell 1978, Wilson and Towne 1978). Ethnographically known Konkow villages on the Feather River were south of the confluence with Honcut Creek (Riddell 1978:371). Valley Nisenan villages near the project area also have been found on the Feather River (Wilson and Towne 1978:388). More such sites could easily be located along the Feather River banks, where they would have been buried by flood deposits.

Before the construction of levees and ditches, the Sacramento Valley frequently turned into an inland sea during winter rainy periods and spring runoff. The Sutter Buttes, immediately southwest of the project area, was an island refuge for indigenous Californians (California Parks 2005). The Maidu called the Buttes "Histum Yani," which translates as "Middle Mountains of the Valley" or "Spirit Mountain." As an important part of their religious beliefs, the spirits of the Maidu people rest in the Buttes after death, before the journey to the afterlife.

During the Gold Rush, nearby Marysville became a large trading center because of its proximity to the gold fields and its accessibility on the Feather River. In 1848, Marysville became the third largest settlement in California. Although gold mining (placer, hydraulic, and dredging) continued for decades as a significant

economic activity in the area, the miners and immigrant families turned to farming for subsistence. Settlers began to farm the fertile agricultural lands along the west banks of the Feather River.

The town of Live Oak was settled in 1866 by A. M. McGrew, and was named for the local groves of oak trees by H. L. Gregory in 1871. Railroads established in the mid- to late 19th century helped Live Oak become a major shipping point for agricultural products.

The small settlement prospered after the California and Oregon Railroad laid tracks in the area in 1869, after which Live Oak became the main point in Sutter County for shipping agricultural produce (Napoli 1997). A store, railroad siding, warehouse, blacksmith shop, post office, and saloon had been constructed by 1874. Five years later, the town had many new businesses and a population of about 125, including 25 Chinese residents. During this period of commercial growth, the first railroad depot was constructed in 1876. This first depot was replaced by a second depot in 1882, which, along with Live Oak Hall (constructed in 1875), is still standing in today's Live Oak Historic Commercial District, a National Register Historic District listed in 1998 (Figures CO-3 and CO-4).

Figure CO-3
Historic Commercial District

The growth of the community slowed during the economic depression near the turn of the century, with the population of Live Oak at only about 400 in 1910 (Napoli 1997). With the construction of the Butte County Canal by Duncan McCallum and Thomas Fleming in 1905–1907, however, local agricultural practices flourished (Butte Creek Watershed Project 1998:150). Now known as the Sutter Butte Canal, this conduit brought water from the Feather River for irrigation. New settler-farmers arrived in the area, producing two agricultural colonies for Mormons and Germans (Napoli 1997). In addition, the arrival of the Northern Electric Railroad (later the Sacramento Northern) to Live Oak in 1906 and the paving of a state highway in 1915 (designated State Route 99 East) brought more settlers and commerce to the town. The community prospered again until the Great Depression of the 1930s. The Second World War revived the economy of Live Oak (Napoli 1997). After this period, businesses were constructed along SR 99. Live Oak was incorporated in 1947.

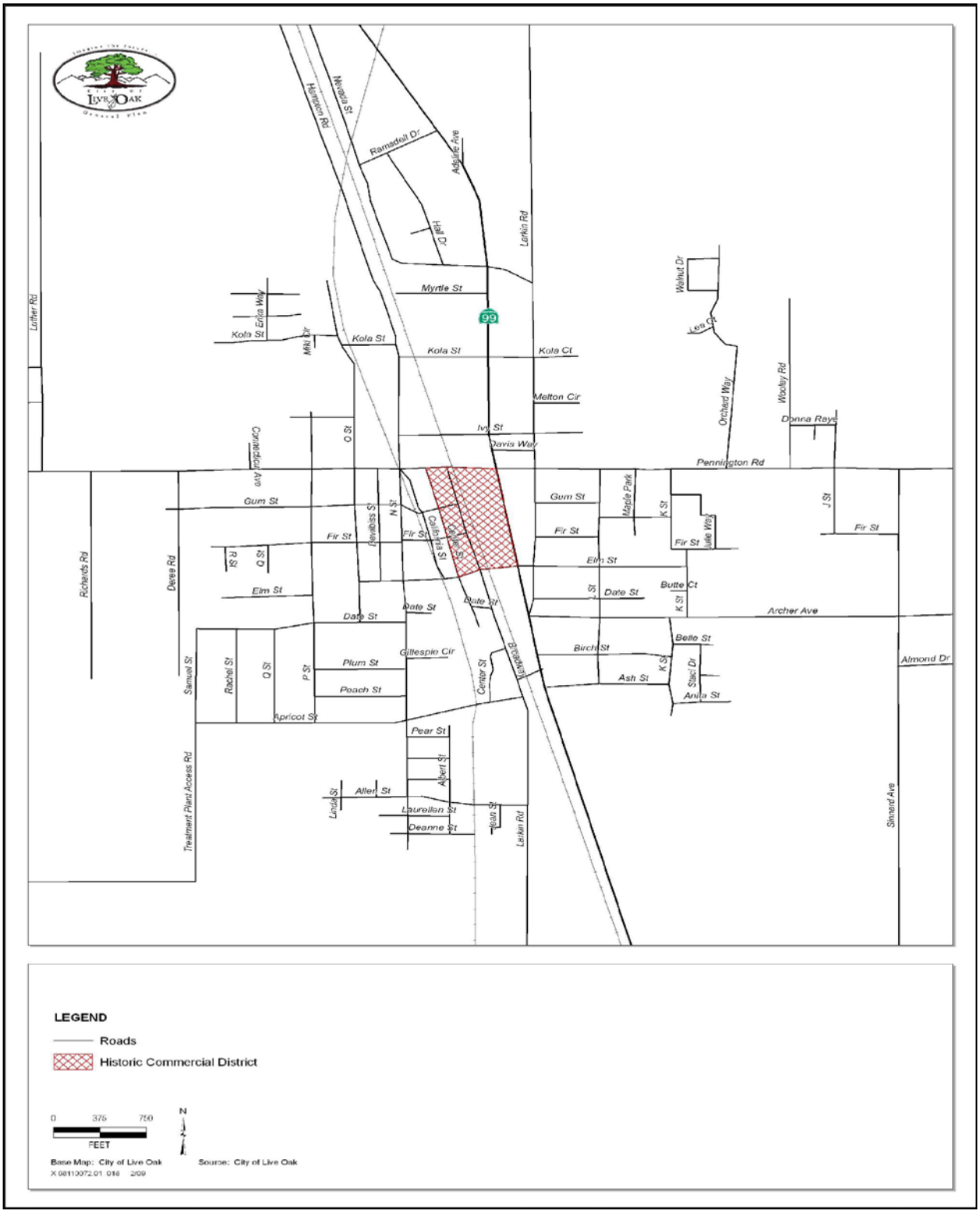

Figure CO-4
Live Oak Historic Commercial District

The history of Live Oak can be seen in the various buildings and sites scattered through the city. The Historic Commercial District, with its palm trees, is certainly the most visible, but historic houses, bridges, and canals also contribute to the landscape. The Live Oak Cemetery is located on Pennington Road, approximately 800 feet west of Luther Road. The cemetery was officially named in 1905 and is still in use today. The earliest tombstone recorded at this historic cemetery marks the grave of Katherine Kustokowick and is dated August 1858 (Sutter County 2005), 8 years prior to the settlement of Live Oak in 1866. In addition to the physical remnants of the past, Live Oak's history is also celebrated in events, such as the annual Peach Festival. This festival is held in the Live Oak Historic Commercial District and highlights the agricultural heritage of the city and Sutter County.

By definition, in order to be considered a fossil, an object must be more than 11,000 years old. Portions of the Planning Area are underlain by Holocene-age (less than 11,000 years old) basin geologic deposits, and do not have important paleontological resources. However, much of the Planning Area is underlain by Pleistocene-age sediments of the Modesto Formation, which is considered a paleontologically sensitive rock unit.

Numerous of vertebrate fossil specimens have been recorded from the Modesto Formation in Yuba City, Woodland, and Davis. Vertebrate fossils have been recovered near the Planning Area and other areas throughout the Sacramento and San Joaquin Valleys. Areas of important finds have sediments related to the Modesto Formation. This suggests that areas with the Modesto Formation have potential for additional fossil remains during construction-related earthmoving activities, including trenching for utilities and other types of earth disturbance and excavation.

KEY ISSUES

The following key issues relate to cultural resources in the Study Area:

- ✓ Along with substantial growth and change in the community is the opportunity to maintain links to the history of Live Oak, including its agricultural heritage.
- ✓ Live Oak does not have a large stock of historic buildings, but the historic buildings that do exist and their context should be preserved to maintain the character of the community.

CULTURAL GOALS, POLICIES, AND IMPLEMENTATION PROGRAMS

The following goals and policies are intended to protect historic and cultural resources within the boundaries of the City's Study Area.

Goal CULTURAL-1. Identify, protect, and preserve Live Oak's prehistoric resources.

Policy Cultural-1.1 New development projects involving the movement, scraping, or leveling of soil should conduct archeological background research to determine if the project is likely to disturb a prehistoric site or traditional-use area. [7] If disturbance is

[7] Traditional-use areas include important places to Native American people, such as spiritual sites, known seasonal gathering areas, and other places that may or may not have remnants.

likely, site analysis will be conducted to identify resources of concern. The project will make all reasonable efforts to use site design to avoid impacts to any prehistoric site or traditional-use area.

Policy Cultural-1.2 The City will use state legislation as a guideline for the identification and protection of prehistoric cultural resources or traditional-use areas.

Policy Cultural-1.3 The City will keep the locations of archaeological sites confidential in order to prevent vandalism and looting.

Policy Cultural-1.4 New developments shall be designed to provide view corridors to the Sutter Buttes by orienting major and minor collectors southwest to provide a valuable community aesthetic amenity and maintain vistas that were important to local Native American populations.

Policy Cultural-1.5 if potential paleontological resources are detected during construction, work shall stop and consultation with the City is required to avoid further impacts. Actions after work stoppage will be designed to avoid significant impacts to the greatest extent feasible. These measures could include construction worker personnel education, consultation with a qualified paleontologist, coordination with experts on resource recovery and curation of specimens, and/or other measures, as appropriate.

Goal CULTURAL-2. Identify, protect, and enhance Live Oak's historic resources and associations.

Policy Cultural-2.1 The City will encourage private property owners to preserve and maintain historic structures.

Policy Cultural-2.2 Roadway and other infrastructure shall be located to avoid taking any property within, or otherwise adversely affecting the Live Oak Cemetery.

Policy Cultural-2.3 The City will encourage adaptive reuse of historic structures where as much of the historic character as possible is preserved. Structures that are grouped in close proximity, particularly rural, agricultural, and structures associated with the railroad, will receive special emphasis.

Policy Cultural-2.4 Infill structures built in the Live Oak Historic Commercial District shall be designed so that their size, shape, design, color, and detail are architecturally compatible with the surrounding buildings.

Policy Cultural-2.5 The City should preserve views of the historic building frontages along SR 99.

Policy Cultural-2.6 The City will establish educational and awareness programs to promote understanding and foster support for preservation of important cultural resources.

Implementation Program Cultural-1

The City will require development projects to protect Native American and prehistoric resources through the following actions or those deemed equally effective by the City:

- ✓ Identify and protect significant archaeological or traditional sites.
- ✓ Request information from the Native American Heritage Commission and the North Central Information Center (NCIC) to determine if prehistoric sites or traditional use areas exist in the project site.
- ✓ Avoid potential impacts to significant cultural resources whenever possible. If impacts are unavoidable, mitigate to a less-than-significant level. Determination of impacts, significance, and mitigation shall be made by a qualified professional archaeologist or architectural historian, as appropriate.
- ✓ Involve the local Native American community in determining the appropriate mitigation of impacts to significant prehistoric sites.
- ✓ Provide the North Central Information Center with appropriate Department of Parks and Recreation site record forms and cultural resources reports.
- ✓ Require a professional archaeologist to monitor all City-sanctioned ground-disturbing activities proposed within 150 meters of the Feather River, (agricultural uses are exempted).

Implementation Program Cultural-2

The City will require development projects to preserve the community's historically significant sites and buildings, whenever feasible, through the following actions or those deemed equally effective by the City:

- ✓ Request information from the North Central Information Center about sites where the proposed development may disturb historic sites or structures.
- ✓ Protect historically significant structures by following state Historic Building Code for all retrofit, remodels or similar construction activities.
- ✓ Leave existing orchard trees in place wherever feasible; plant smaller in-fill trees so that as trees age they can be removed without leaving large gaps.
- ✓ Ensure that roads planned around the Live Oak Cemetery are located to avoid noise and visual impacts to the cemetery.

Implementation Program Cultural-3

The City will investigate and provide information to property owners regarding tax incentives and other federal and state programs that are offered for rehabilitation of historic structures. The City will explore opportunities to also participate financially or otherwise in historic rehabilitation projects consistent with General Plan policy, with the focus of such efforts being in the Live Oak Historic Commercial District.

Implementation Program Cultural-4

If potential paleontological resources are detected by construction workers or City staff during construction, work shall stop and consultation is required to avoid further impacts. Actions after work stoppage will be designed to avoid significant impacts to the greatest extent feasible. These measures could include construction worker personnel education, consultation with a qualified paleontologist, coordination with experts on resource recovery and curation of specimens, and/or other measures, as appropriate.

ENERGY

ENERGY CONTEXT

Energy used in Live Oak comes from several sources, including oil, natural gas, hydroelectric, solar, and wind. Major uses of energy in the city include transportation, building operations, and commercial, agricultural, and industrial production purposes. For much of Live Oak's history, energy has been relatively abundant, cheap, and hassle free. Today, non-renewable fossil fuels provide the majority of the energy required for the movement of goods and services, commuting, and many agricultural and industrial operations.

During the planning horizon of the 2030 General Plan, it is likely that a variety of energy-related challenges will face not only Live Oak, but also the State of California and the nation. How Live Oak plans for, and responds to, these potential challenges will influence the quality of life for its residents and competitiveness of local businesses.

Fossil fuel costs could increase substantially over the next three decades. The U.S. Department of Energy's 2004 report, "Long-Term World Oil Supply Scenarios," indicates that oil production will most likely peak by the middle of this century. Increasing global demand and market speculation can also raise prices. In addition to future price increases, regulatory changes will greatly affect energy use during buildout of this General Plan. Sources and uses of energy are being closely examined by the State of California and many other governments in relation to global climate change. In California, vehicle emissions are the largest contributor to regional air quality problems and climate changing GHG emissions. Energy use and associated greenhouse gas emissions related to building operations are secondary to those related to transportation, but still are important. The state has enacted numerous laws and regulations to clean the air and avoid economically and environmentally dangerous levels of climate change. The state's response to climate change is evolving as of the writing of this document, but there is enough information currently available to inform the City's land use, transportation, community design, conservation, and related policies.

Energy policies that relate to transportation are discussed in the Circulation and Land Use Elements and are highlighted in the "Air Quality" section of this Element. Policies and measures related to energy efficiency and renewable energy production are provided below.

Energy efficiency measures provide city residents and businesses substantial cost-saving opportunities with reduced energy consumption. Energy efficiency retrofits could substantially improve the energy performance of the city's existing building stock. State regulations will require new development to meet increasingly stringent energy efficiency requirements. The 2007 California Green Building Standards Code (California Code of Regulations, Title 24, Part 11) is mandatory as of 2010 (Department

of General Services 2009). The amended code is expected to reduce building energy consumption by 15 percent, water consumption by 20 percent, and landscape water consumption by 50 percent. New residential buildings will be required to use zero net energy by 2020, and commercial buildings will need to achieve this target by 2030. In addition to buildings, there are a variety of strategies for design and construction of infrastructure and public facilities that can provide energy conservation benefits. Production and purchasing of renewable energy is another effective way for the community to reduce energy demand (and provide local cost savings). Recent advances in technology provide Live Oak with a variety of feasible options for renewable energy production. Technologies, such as solar photovoltaic, solar hot water, and geothermal systems, will play important roles in achieving this goal. By purchasing renewable energy, many utilities are increasing their renewable energy portfolios. The Pacific Gas & Electric Company, the City's primary energy supplier, offers renewable energy purchasing options to residential and commercial customers. Assembly Bill 2466 authorizes local governments to receive a utility bill credit for surplus renewable electricity generated at one site against the electricity consumption at other sites.

KEY ISSUES

The following key issues relate to energy use in the Study Area:

- ✓ Energy conservation strategies are a part of the state's greenhouse gas reduction legislation and will be a part of regulations for building construction;
- ✓ Energy conservation in the built environment will provide residents and businesses with long-term cost savings;
- ✓ There are widely available, widely used, and effective energy conservation strategies for building materials and design, as well as site planning measures that can feasibly be incorporated in Live Oak; and,
- ✓ Energy efficient practices can be accomplished with little additional up-front cost, which over the long term can be recovered.

Further discussion of the City's approach towards energy conservation, including additional goals and policies, can be found in the Land Use, Circulation, and Community Character Elements.

ENERGY GOALS, POLICIES, AND IMPLEMENTATION PROGRAMS

The following goals and policies are intended to provide for the conservation of energy within the City's Study Area.

Goal ENERGY-1. Pursue energy-efficient technology, best practices, and materials.

Policy Energy-1.1 The City will encourage new developments to use building orientation and site design that optimizes opportunities for on-site solar generation. The City will encourage new developments to use street and lot orientation and lot dimensions that facilitate the use of solar energy and climatically appropriate design.

Policy Energy-1.2 The City will encourage new developments to orient as many buildings as possible with the longer axis of the building, also known as the ridge line, oriented east-to-west, in order to maximize the potential for passive solar heating in the winter and to minimize heat gain from the afternoon summer sun.

Policy Energy-1.3 Shade trees or other appropriate plantings should be used in new lower-density residential development (e.g., trellises) to protect buildings from unwanted solar gain in summer months (see Figure CO-5). Trees and plantings should be located on the east and west sides of each home. Shade trees should be located at an appropriate distance from buildings to provide adequate shading, while reducing potential damage to buildings. Shade trees need to be located so that active and passive solar energy systems are not diminished. Using deciduous trees on the southern side of the structure is encouraged, to allow cooling in the summer and solar gain in winter.

Policy Energy-1.4 Development plans should demonstrate preservation of solar access for residential buildings within and adjacent to the project. The City will waive this requirement in medium-density and higher-density residential projects and mixed-use projects if needed to achieve the densities allowed by the General Plan.

Policy Energy-1.5 New buildings should enhance natural ventilation and promote effective use of daylight, to reduce use of energy. Designs should emphasize ventilation strategies such as natural convection and push-pull ventilators. Structures should be designed to provide abundant natural light through high-performance glazing systems, skylights, light ducts, light shelves, and other strategies (see Figure CO-6).

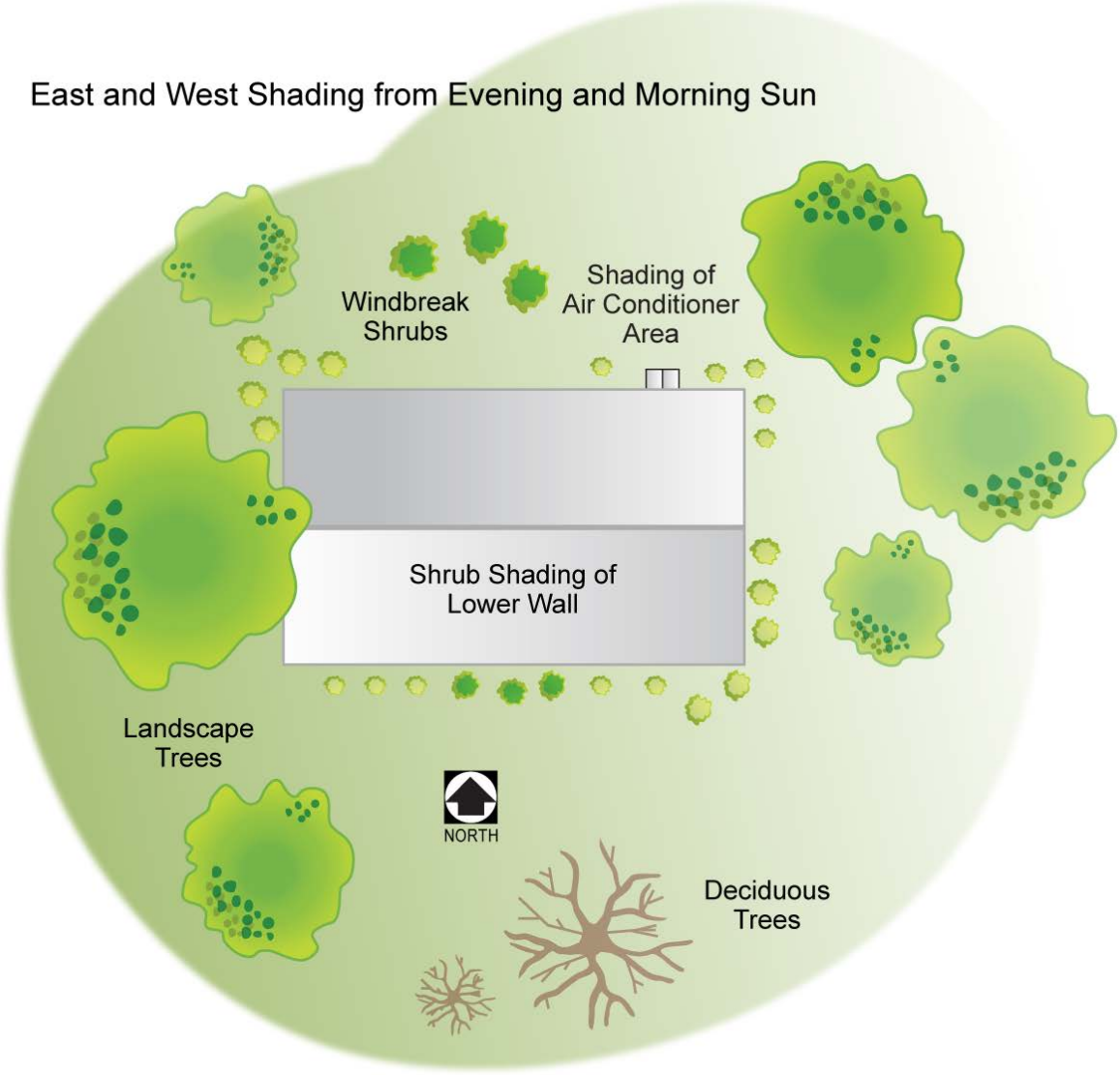

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Figure CO-5
Shading Orientation

Figure CO-6
Examples of skylights and the use of daylighting in building design

Policy Energy-1.6 The City will also provide incentives, such as expedited permitting or density bonuses to developers that design and construct net zero energy residential prior to 2020, and commercial and institutional buildings prior to 2030.

Policy Energy-1.7 New City-owned buildings and major remodels and additions should be designed to achieve the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) certification or better, where funding allows. Financial analysis of both first costs and long-term operational costs should guide the City's evaluation of LEED certification.

Policy Energy-1.8 The City will promote Build-it-Green or LEED–Homes certification of new single-family properties.

Policy Energy-1.9 The City will promote LEED or equivalent certification of multiple-family, commercial, and industrial properties.

Policy Energy-1.10 The City will provide incentives, such as expedited permitting or density bonuses to development with over 75 percent of the units achieving LEED-certification or equivalent performance standards achieving these performance standards.

Policy Energy-1.11 The City will encourage energy efficiency audits of existing buildings and help facilitate the implementation of identified efficiency improvements. The City will conduct energy efficiency audits of all City-owned buildings.

Policy Energy-1.12 The City will encourage the retrofitting of existing buildings throughout Live Oak with energy efficient systems, energy-efficient appliances, insulation, energy-efficient doors and windows, and other elements that conserve resources.

Policy Energy-1.13 New commercial, institutional, and industrial development should reduce potential urban heat island effect by using U.S. Environmental Protection Agency–ENERGY STAR®-rated roofing materials and light colored paint, using light-colored paving materials for internal roads and parking, and by using shade trees to shade south and west sides of new or renovated buildings, to the greatest extent feasible.

Policy Energy-1.14 New commercial, institutional, and industrial development shall incorporate shade trees or shade structures in any newly constructed surface parking areas. The minimum requirement is 50 percent shading (at maturity where trees are used) for all new parking lots.

Goal ENERGY-2. Support the use of renewable energy technologies within the City.

Policy Energy-2.1 The City will explore the installation of renewable energy systems on City buildings and properties.

Policy Energy-2.2 New construction or major renovation of commercial and industrial buildings over 10,000 square feet shall incorporate renewable energy generation, where feasible, to provide for the project's energy needs.

Policy Energy-2.3 The City will maximize the use of renewable energy in meeting City building energy needs with a goal of 50 percent or more renewable energy by General Plan buildout.

Policy Energy-2.4 The City will evaluate the operational cost-savings and feasibility of installing solar hot water systems to heat the community swimming pool.

Implementation Program Energy-1

The City will create permitting-related and other incentives for energy-efficient building projects. These should include, but are not be limited to giving projects that exceed Title 24 Standard by 10 percent or more priority in plan review, priority in processing and field inspection services, and density bonuses.

Implementation Program Energy-2

Amend subdivision standards to ensure that street and lot orientation facilitates buildings that incorporate solar design and renewable energy systems. Street and lots shall be designed in a way that allows residential lots to accommodate a building's long axis in an east-west direction.

Implementation Program Energy-3

The City will amend the zoning and subdivision ordinances to provide regulatory guidance for lot and building orientation to allow passive solar and renewable energy systems use.

Implementation Program Energy-4

The City will proactive identify and take advantage, where possible, of state and federal grants, low-interest financing, and other funding mechanisms for energy efficiency retrofits and alternative energy projects for civic, residential, and commercial buildings.

Implementation Program Energy-5

The City will allow solar financing programs designed to facilitate the installation of solar energy systems on residents' homes. Such programs would establish a sustainable energy financing district and would allow property owners to borrow money from the City to install solar energy systems. Property owners would voluntarily participate in the program and would repay the cost of the solar energy system over a 20-year period through a special annual tax on their property tax bill. Only property owners who participate in the program will pay the sustainable energy financing district tax. Non-participants would experience no change in taxes due to the program.

Implementation Program Energy-6

The City will provide public outreach to support reduced energy consumption, the use of alternative and renewable energy sources, green building practices, recycling, and responsible purchasing.

AGRICULTURAL RESOURCES

AGRICULTURAL CONTEXT

Live Oak is located in the Sacramento Valley, an area renowned for the quality of its farmland (Figure CO-7). The City and the surrounding area contain some of the richest soils in California. Additionally, reliable water supplies and the long growing season make the City's farmland very productive and profitable.

Agriculture is a fundamental part of the landscape, economy, and culture of the Live Oak area. Orchards occur throughout much of the Study Area. Crops such as plums, peaches, apricots, almonds, walnuts, citrus, and alfalfa provide jobs and income for a number of Live Oak residents and businesses. Farmland frames the city and provides valued scenic vistas.

Eighty-three percent of Sutter County's land area is devoted to agricultural production, and the county is one of the state's premier agricultural counties. While agricultural production has fallen in many other counties in California, Sutter County farm production continues to rise. Local agricultural revenues continue to rise in the county. In 2006, agriculture generated $358,845,200 in revenue for county farmers and ranchers.

KEY ISSUES

The following key issues relate to agriculture in the Study Area:

- ✓ Agriculture is a vital component of the character, economy, history, and culture of Live Oak and Sutter County.
- ✓ Farmland and other open space around the edges of the community should be protected as the City accommodates new growth.
- ✓ Land-efficient development practices are needed to avoid unnecessary or premature conversion of agricultural lands to urban use.

AGRICULTURAL GOALS, POLICIES, AND IMPLEMENTATION PROGRAMS

The following goals and policies are intended to protect agricultural resources.

Goal AGRICULTURAL-1. Preserve agricultural resources and support the practice of farming.

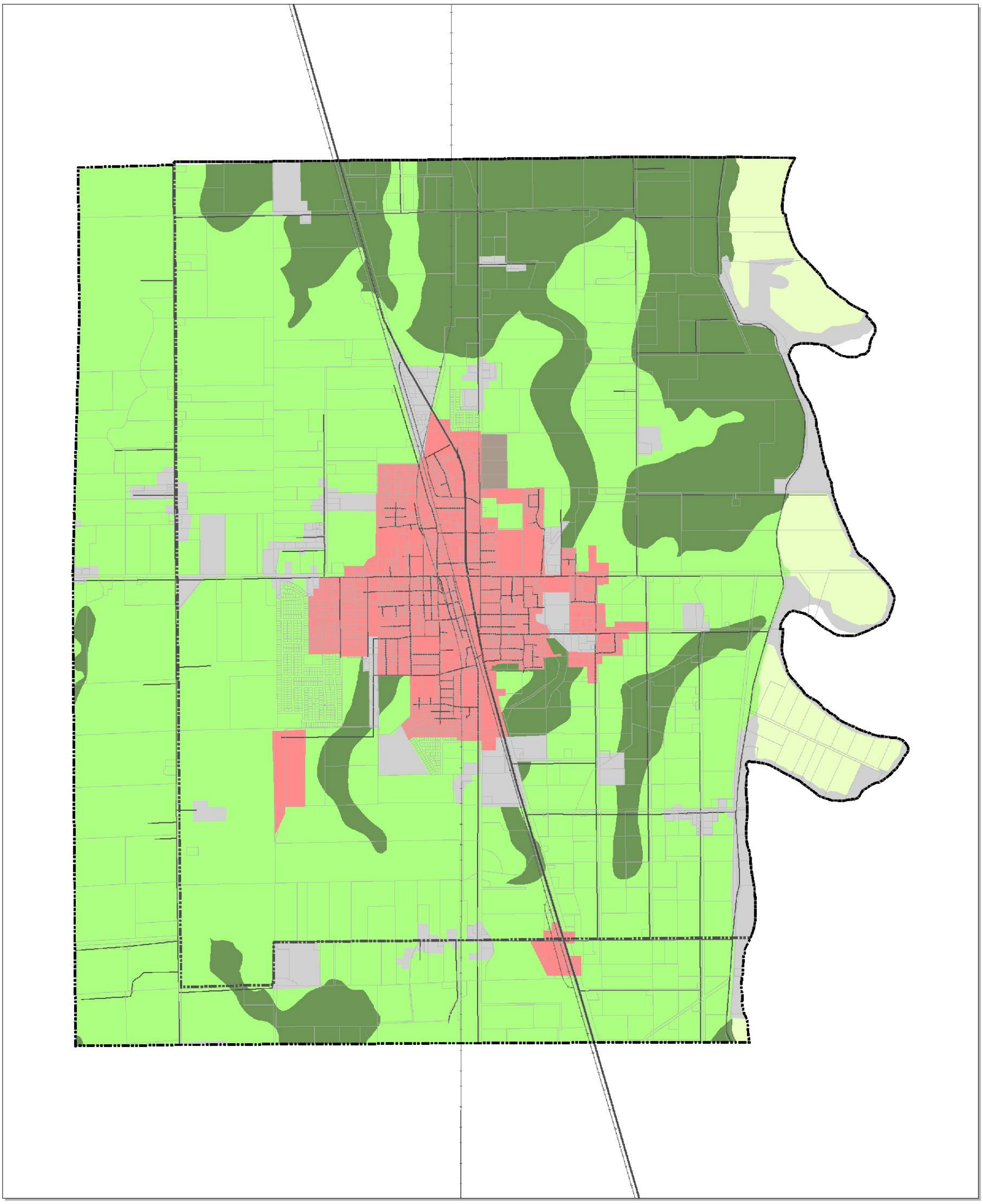
Policy Agriculture-1.1 Preserve agricultural enterprises by supporting right-to-farm policies.

Policy Agriculture-1.2 Ensure that residential development in the City is located and designed to be compatible with adjacent, ongoing agricultural activities.

Policy Agriculture-1.3 As a part of the City's economic development strategy, the City will focus on efforts to attract industries related to, and supportive of, the local agricultural economy.

Policy Agriculture-1.4 The City will coordinate with Sutter County in a way that provides mutual benefits regarding establishment of agriculture processing and handling industries in the Study Area that would not adversely affect residents and that could benefit local farm operations.

Policy Agriculture-1.5 The City will work with farmers, property owners, extensions, agencies, and agricultural organizations to enhance the viability of agricultural uses and activities.



LEGEND

- Study Area Boundary
- Sphere of Influence
- Parcels
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Grazing
- Urban and Built_Up Land
- Other Land

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Base map: CASIL Layers
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Source: FMMP 2006

Imagine the future...
City Of Live Oak
General Plan

Figure CO-7
Farmland Classifications

Implementation Program Agriculture-1

The City will adopt and maintain a "right-to-farm" ordinance (or adopt appropriate portions of Sutter County's right-to-farm ordinance) to inform residents of ongoing agricultural practices and protect farmers and other agriculture interests from dumping, nuisance complaints, and other problems typically associated with new residents living in agricultural areas.

MINERAL AND SOIL RESOURCES

The Study Area does not contain any known mineral resource zones (MRZs). The California Surface Mining and Reclamation Act of 1975 (SMARA) requires cities to incorporate mapped mineral resource designations approved by the State Mining and Geology Board in their general plans. SMARA limits new development in areas with important mineral deposits. Due to lack of MRZs within Live Oak, the General Plan does not contain a mineral resource map.

The community's numerous orchards and farms are testament to the quality of Live Oak's soils. The Farmland Mapping and Monitoring Program of the California Department of Conservation classifies the majority of the city's soils as either Prime Farmland or Farmland of Statewide Importance. Soils in the Live Oak Study Area generally have a low risk of erosion because the city is mostly flat.

MINERAL AND SOIL GOALS AND POLICIES

Goal MINERAL-1. **Protect soil and mineral resources in the Live Oak Study Area consistent with other environmental, social, and economic goals.**

Policy Mineral-1.1 The City will coordinate with the state to incorporate, as necessary, any policies for conservation and possible future extraction of mineral or soil resources of regional or statewide significance.

WATER RESOURCES

WATER CONTEXT

Water is critical to the existence and vitality of any community. Live Oak recognizes the importance of this resource and seeks to ensure a reliable supply of high quality water for residents, businesses, agriculture, and ecosystems in the community. The development envisioned in the 2030 General Plan would result in increased water consumption, and wastewater and stormwater generation.

SURFACE WATER RESOURCES

Sutter County lies within the Feather River watershed, which in turn is located within the Sacramento River watershed. The most notable hydrologic feature in the Study Area is the Feather River, which borders the entire eastern boundary of the Study Area. Other notable hydrologic features within the Study Area are irrigation laterals, canals, and sloughs that are used for water supply and flood control.

The Feather River watershed is located in California's northern Sierra Nevada and encompasses a broad variety of terrain, climate, historic use, and flora and fauna. It drains 3,222 square miles of land base from the Sierra Nevada crest westward into the Sacramento River. Elevation ranges from 50 to over 10,000 feet, and annual precipitation varies broadly from more than 70 inches on the wet western slopes to less that 12 inches on the arid east side. The Plumas National Forest manages over 80 percent of the watershed, while alluvial valleys are predominantly privately owned and are grazed by livestock.

GROUNDWATER RESOURCES

The Live Oak Study Area lies within the Sacramento Valley groundwater basin. The Sacramento River, which forms the western border of Sutter County, the Feather River, which forms a portion of the eastern boundary, and the Bear River, which forms the border in the southeastern part of the county (between Yuba County and Sutter County), are sources of groundwater recharge for the groundwater basin. Other sources include deep percolation of precipitation and water applied for agriculture, and subsurface inflow from adjacent groundwater subbasins within the Sacramento Valley. Groundwater outflow from Sacramento Valley groundwater basin results from pumping and subsurface outflow to rivers and adjoining areas of the Sacramento Valley. The Sutter Buttes lie between the Sacramento River and Feather River in the northern part of the county, and form a barrier to groundwater flow.

In the Study Area, groundwater flows from north to south at a relatively flat gradient. The general direction of groundwater flow and the depth to groundwater have remained somewhat stable since the mid 1940s. Groundwater has been measured at a depths ranging from 1 to 5 feet near the west end of the Study Area, extending to approximately 16 to 20 feet below the surface. To the west of the current city of Live Oak, groundwater has been encountered at approximately 7.5 feet below the surface. Detailed information about groundwater recharge sources and about flood protection can be found in Appendix C, "Background Information, SB 5 General Plan Amendment for 200-Year Flood Protection."

HYDROLOGY AND WATER QUALITY GOALS, POLICIES, AND IMPLEMENTATION PROGRAMS

The following goals and policies provide for the conservation and protection of water resources within the Study Area.

Goal WATER-1. Maintain and improve groundwater and surface water quality.

Policy Water-1.1 New development shall incorporate drainage system design that emphasizes infiltration and decentralized treatment (rather than traditional piped approaches that quickly convey stormwater to large centralized treatment facilities), to the greatest extent feasible.

Policy Water-1.2 Existing swales and sloughs should be preserved, restored, and used for stormwater drainage whenever possible.

Policy Water-1.3 The City will require developments to use best management and design practices to reduce stormwater runoff levels, improve infiltration to replenish

groundwater sources, and reduce pollutants close to their source. The City will require new development to use permeable surfaces for hardscape wherever possible. Impervious surfaces such as driveways, streets, and parking lots should be interspersed with vegetated areas that allow for infiltration of stormwater. LID techniques, such as rain gardens, filter strips, swales, and other natural drainage strategies, should be used to absorb stormwater, reduce polluted urban runoff, recharge groundwater, and reduce flooding (see Figure CO-8).

Policy Water-1.4 The City will require development projects to incorporate appropriately scaled stormwater facilities. The City will place emphasis on making these holding areas serve multiple functions, such as soccer fields or passive recreation areas.

Goal WATER-2. Ensure adequate and efficient long-term water supply.

Policy Water-2.1 The City will incorporate into its entitlement review process compliance with portions of state law that require demonstration of adequate long-term water supply for large development projects (Senate Bills 610 and 221).

Figure CO-8
Low-Impact Development Examples

Policy Water-2.2 The City will condition approval of new development on the availability of sufficient water supply, storage, and fire flow (water pressure), per City standards.

Policy Water-2.3 The City will encourage the use of native, drought-tolerant landscaping throughout the City to conserve water and filter runoff.

Policy Water-2.4 Native and drought-tolerant landscaping should comprise at least 50 percent of landscapes in commercial and industrial projects and 100 percent of all medians and right-of-way landscaped areas along public streets.

Policy Water-2.5 The City will require the use of water conservation technologies, such as low-flow toilets, efficient clothes washers, and more efficient water-using industrial

equipment, in all new construction and retrofitted and substantially remodeled buildings, consistent with building code requirements.

Policy Water-2.6 The City will support the retrofitting of existing buildings throughout Live Oak with water-saving fixtures.

Policy Water-2.7 The City will participate in regional groundwater basin planning and regional water-management planning efforts to ensure that future demand for water does not overdraft the groundwater supply.

Policy Water-2.8 The City will adopt water conservation pricing (e.g., tiered rate structures) to encourage efficient water use.

Implementation Program Water-1

The City will revise the Public Works Improvement Standards, as necessary, to encourage use of natural drainage systems and low impact development principles in order to reduce stormwater infrastructure costs and improve water quality. The City will make revisions required to emphasize the slowing down and dispersing of stormwater by using existing landscaped swales and constructing new swales to convey stormwater runoff, encouraging sheet flow and the use of landscaped infiltration basins in planter strips along roadways, and employing other best management practices, as appropriate. The City will establish standards and fee programs to require and/or provide incentives for methods to slow down and filter stormwater, as outlined in this Element. These measures include, but are not limited to, reduced pavement, permeable pavement, vegetation that retains and filters stormwater, and the use of drainage sheet flow and filtration.

Implementation Program Water-2

The City will revise landscaping requirements to include drought-tolerant, low-maintenance plants.

Implementation Program Water-3

The City will participate, as appropriate in the Sutter County Groundwater Management Plan to ensure perennial sustainable yield and avoidance of overdraft and long-term drawdown within and adjacent to the East Butte subbasin, while accommodating land use change as described in the 2030 General Plan.

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